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WHY IS THE DOLLAR SHRINKING?

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WHY IS THE DOLLAR SHRINKING?

A STUDY IN THE HIGH COST OF LIVING

BY

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"THE NATURE OF CAPITAL AND INCOME," ETC.

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To

SIR DAVID BARBOUR

VETERAN ADVOCATE OF THE PRINCIPLES

FOR WHICH THIS BOOK STANDS

PREFACE

PRESENT-DAY discussion on the high cost of living shows some bewilderment in the mind of the general public as to the mechanism by which the scale of money prices is determined. Few people realize that the principles determining the general scale of prices are quite distinct from the principles determining the individual prices themselves. Few realize, for instance, that the money price of any commodity has to do not only with that commodity but also with money, and that, therefore, a monetary element enters into every price.

The object of this book is to state, as simply as possible, the general principles which fix the scale of prices, and to show the manner in which these principles apply to the present "high cost of living."

These principles are not new. They are the same as the well-known principles of Ricardo, and of most subsequent writers on economics. They have been more elaborately stated in my "The Purchasing Power of Money."

If these principles are correct, the purchasing power of a dollar — or its reciprocal, the level of prices — depends exclusively on five definite

factors: (1) the volume of money in circulation; (2) its velocity of circulation; (3) the volume of bank deposits subject to check; (4) its velocity; and (5) the volume of trade. Of course, each one of these five influences itself depends on other more remote influences, and these others on others still more remote, and so on *ad infinitum*. But no cause can affect the scale of prices except as it acts through one of the five above enumerated. In my opinion the branch of economics which treats of these five regulators of purchasing power deserves to be recognized as an exact science, capable of precise formulation, demonstration, and statistical verification.

For a hundred years the world has been suffering from periodic changes in the scale of prices, affecting the interests of hundreds of millions of human beings and producing alternate expansions and depressions of trade. It is not too much to say that the evils of a variable monetary standard are among the most serious economic evils with which civilization has to deal.

In the United States we are about to witness some extremely interesting applications of the principles here stated, owing to the two great acts passed by Congress toward the close of 1913, *i.e.*, the tariff act and the currency act. For instance, the tariff reduction, by inviting imports of commodities, will tend for a time to encourage the export of gold, until the drain limits itself by the fall of our prices or the rise of foreign prices. The

currency act will probably tend to increase bank deposits and, if so, to restrain the fall of the American scale of prices and so to prolong the export of gold. If these results ensue, there may well be much surprise expressed and some criticism. It will then be important that the public shall correctly understand what is going on; otherwise many senseless proposals may be made and even adopted.

I hope soon, in another book, to set forth a remedy for changes in the scale of prices by "standardizing the dollar."

I am indebted to the *North Ameri an Review* for permission to use unaltered certain passages from my article "Is the High Cost of Living Going Higher?" published in December, 1912.

I am also under obligations to several of my students, especially Mr. Paul M. Atkins, for aid in assembling the statistics from which the diagrams are constructed.

IRVING FISHER.

YALE UNIVERSITY,
April, 1914.

POSTSCRIPT

(August 25, 1914)

This book was already printed, but not issued, when the great European war broke out. So colossal an event will, naturally, have important effects on prices. At this writing, when the war is merely beginning, it is, of course, quite impossible to predict with accuracy what all these effects will be. In general, however, we may feel confident that the net and ultimate effect will be to aggravate the upward tendency which, as we already had reason to believe, was impending. In Europe, especially, the cost of living will probably rise above anything previously known. The rise is likely to be greater after the war than during the war. The rise during the war will probably be less rapid in England than in the other warring countries, but after the war, more rapid. There is even possible, the anomaly, that, during the war, the general level of prices in England will actually fall. The rise during the war, in small countries, like Belgium, will probably be greater than that in large countries, like France, which are more nearly self-supporting. The rise in any country which resorts to irredeemable paper money will be further aggravated in proportion to the degree of inflation.

Such are the chief probable effects on price levels.

But what is more important, this rise will be an especial hardship to the peoples at war because of the great impoverishment which the war will surely bring. That is to say, high money prices will be accompanied by low money earnings. The cost of the war, according to the best estimates, will equal or exceed half of the total income of the inhabitants of the warring nations. It is true that much of this burden can be shifted to future years; but, even then, it will severely tax resources already crippled by the previous destruction and disorganization of capital.

Fortunately for us in the United States, unless we are drawn into the conflict, the rise of prices will be less than in Europe, and we shall have our earning power substantially unimpaired.

We are speaking, of course, only of *general* price movements, not of individual prices. We may be sure that, though many goods will rise in price, some will fall, and some will oscillate up and down. In fact, the first and most striking effect of the war on prices will be to *disperse* or scatter them. Foods will especially rise and bonds will especially fall.

In the four pages to which this postscript must be restricted, it is only possible to mention a few of the chief reasons which have led to these conclusions.

This book was written largely to show that the price level is, in general, the resultant of a race between the circulation of money and credit on the one hand and the volume of trade on the other, — a race as to which will grow the faster.

During the war both racers will rest awhile. Prob-

ably both will recede materially, but trade faster than circulation; this will cause prices to rise. After the war both will again expand, but credit will rebound faster than trade; this will cause prices to rise still further.

If we examine the diagrams of this book during and after the great wars of modern times, the Crimean War (1854–1856), the American Civil War (1861–1865), the Franco-Prussian War (1870–1871), the Spanish-American War (1898), the Boer War (1899–1902), and the Russo-Japanese War (1904–1905), we shall notice that the price level usually rises at the beginning of a war and again after the war is finished. In the American Civil War, the existence of the Greenbacks obscured these facts. But the price level, expressed in gold, increased faster after, than it did during, the Civil War.

Edward E. Gellender, who has made a detailed study of prices in relation to wars, shows in the publications of the (British) Institute of Bankers, November, 1901, that after wars trade generally booms and prices rise until a crisis appears (*e.g.* that of 1857 after the Crimean War, that of 1866 after the Civil War, that of 1873 after the Franco-Prussian War).

We have ventured the opinion that the English price level will rise less during and more after the war than Continental price levels. This is because it is believed that the effect on prices due to changes of trade in England will be *less*, and the effect on prices due to changes of her money and credit circulation, *more* than on the Continent, both during and after the war. During the war, England will withdraw

fewer reservists from industry than the other nations; and there is less chance in England of the stoppage, by physical destruction, of her internal commerce. Even her foreign trade is being safeguarded from interference far more thoroughly than is that of any other warring nations; and, in any event, this foreign trade, vast as it is, only amounts to perhaps a tithe of the internal commerce. On the other hand, since England is much more fully on a credit basis than the Continent, where the use of checks is not yet widespread, the reduction, through hoarding and stoppages of loans, in the circulation of cash and credit in England, will have more effect toward depressing the price level than on the Continent. After the war the rebound of credit will likewise be more effective in England than on the Continent.

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WHY IS THE DOLLAR SHRINKING?

WHY IS THE DOLLAR SHRINKING?

A STUDY IN THE HIGH COST OF LIVING

CHAPTER I

UNDERLYING IDEAS

§ 1. Wealth

THE purpose of this little book is to explain as clearly and briefly as possible the reasons why a dollar will not go as far as it did ten or fifteen years ago and why in general its purchasing power should fluctuate from time to time. This problem is only a part of the great problem of the high cost of living. The problem of the cost of living in its completeness is a problem of the purchasing power of incomes, and the purchasing power of any income is dependent on two factors of which the purchasing power of the dollar is only one; the other is the number of dollars in that income. In the present book we shall not take up the latter factor except incidentally, but shall confine ourselves to the former, — the purchasing power of the dollar.

But this narrower problem is really the important problem at the present time, for we are not suffering to-day — at least the average man is not — from a high cost of living in the sense that our income as a whole will not buy as much as fifteen years ago. Though it is quite true that an individual dollar will not buy as much to-day as fifteen years ago, yet the average man to-day has so many more dollars of income than did the average man fifteen years ago that incomes as a whole will buy more.

If we are to understand this problem of the high cost of living, we must, at the outset, recognize the fact that the cost of living is "high" *in terms of money*. The problem then is not only concerned with "living" — *i.e.*, food, clothing, shelter, etc. — for which we pay our money, but also with this money which we pay. In short the problem of the purchasing power of the dollar has to do with the dollar as well as with the things the dollar will buy. It is simply a question of the relation between money and goods.

There are few things in life more familiar than "money" and few less understood. To avoid errors at the outset, we should acquaint ourselves with certain underlying ideas.

One very common mistake is to confuse money with wealth. Wealth [1] includes all *material objects*

[1] For fuller discussion, see the writer's *The Nature of Capital and Income*, New York (Macmillan), 1906. Reprinted 1912.

owned by human beings. Thus lands and buildings, raw materials and finished products are wealth. Gold is a kind of wealth, which, though insignificant in amount, is important because from it the chief money of the world is made, and in terms of it all other wealth is expressed.

Because we usually express wealth in dollars and cents we are therefore apt to forget that primarily each kind of wealth is measured, not in money, but in its own physical units. There are several ways of measuring wealth in physical units. Most articles of commerce are measured by weight. Coal is measured in tons; cotton in pounds; gold in ounces. Even when gold is measured in "dollars" we must not forget that the gold dollar is merely a certain unit of weight — about the nineteenth of an ounce (*i.e.*, 25.8 grains of standard gold, nine-tenths fine or pure).

Some commodities are measured in spacial units — units of length, area, or volume. Thread is measured by the yard; carpets by the square yard; land by the acre; gas by the cubic foot; wheat by the bushel; milk by the quart; wood by the cord.

Sometimes there are definite units in which articles are already formed. Thus eggs, while they may be measured in pounds, are usually simply counted, the egg itself being the unit. Chairs, books, desks, bicycles, locomotives, and hundreds of other articles might be cited which exist in definite units.

We can usually translate from one unit into another. Thus tomatoes may be measured and sold by the bushel, which is a spacial unit, or by the pound, which is a weight unit, or they may be counted and sold by the dozen.

Wealth must not be confused with the mere *qualities* of wealth; thus the fertility of the soil is not wealth though fertile soil is wealth. Nor should wealth be confused with the use or benefits of wealth, nor with the rights to those benefits ("property rights"), nor with the evidence or written certificates of those rights.

Different kinds of wealth are constantly being exchanged. An exchange of two articles of wealth between two different persons is the mutual and voluntary transfer of their ownership, each transfer being made in consideration of the other.

While it is true that any two kinds of wealth may be exchanged, some kinds of wealth are more acceptable in exchange than others. Money primarily means wealth which is *generally* acceptable in exchange. This definition is based on the most important characteristic of money — its exchangeability or capacity to serve as a medium of exchange. When one of the two objects exchanged is money, the exchange is called a purchase (to the one who parts with the money) or sale (to the one who receives the money). When neither of the two objects exchanged is money the exchange is called barter.

The price of wealth of any kind is the amount of wealth of any other kind given in exchange for a unit of that wealth, *i.e.*, it is the "ratio of exchange" found by dividing one of the quantities of wealth exchanged by the other. The denominator of this ratio is the quantity of the article the price of which is to be expressed. The numerator is the quantity of the other article.

Theoretically, we can always express the price of either of the two articles in terms of the other. But usually money is one of the two things exchanged and is the numerator.

Having defined price, we next define value. The value of any given amount of wealth is simply its price multiplied by its quantity. Thus if the price of steel rails is $28 per ton, the value of a thousand tons is $28 per ton multiplied by 1000 tons, or $28,000. As soon as we set a price on various kinds of wealth we can measure their value if we know their quantity.

The measurement of various items of wealth in "value" has a great advantage over its measurement in "quantity." It enables us to translate many different kinds of wealth into *one* kind and thus to add them all together. Pairs of shoes, pounds of beef, houses, and bushels of wheat are unlike quantities and cannot be added together. But their values, being expressed in a single common unit (as the dollar), may be added together, despite the diversity of the various articles thus valued.

Since prices and values are usually expressed in terms of money, — the most exchangeable kind of wealth, — money may be said to bring uniformity of measurement out of diversity. In other words, it is not only a *medium of exchange*, but it can be used also as a *measure of value*.

It serves as a means of comparing values of different things by expressing them both in a common denominator. It would be far more trouble to compare each article directly with every other article, for there would be very many more comparisons.

Although this reduction to a common money measure is a great practical convenience, we must not imagine that it gives what could in any fair sense be called "the only true measure" of *wealth*. In fact, to measure the amount of wealth by its money value is often misleading. The money value of car wheels exported from the United States in one month was $12,000 and in a later month $15,000, from which fact we might infer that the quantity of these exports had increased. But the *number* of car wheels exported in the first of those two months was 2200, and in the second only 2100, showing a decrease. The price had increased faster than the number had decreased. Likewise, the figures for imports of coffee in these periods show a decline in dollars, despite an increase in pounds. Here the price had fallen faster than the number of pounds had risen. It is conceivable that the

quantity of every article might decrease, and yet the price simultaneously increase so much that there would be an apparent increase of wealth when there really was nothing of the kind. This is apt to be the case in times of inflation and depreciation of the currency, such as the present. For this reason a very large part of the alleged recent increase of wealth and trade in the United States is fictitious.

Even when we are confessedly trying to measure the value of wealth and not its quantity, it is difficult or impossible to find a one "right" way. Imports into the United States from Mexico in one year were worth 28 millions of American gold dollars, and ten years later their value was 40 millions — an increase in value of 42 per cent; but these very same imports measured in Mexican silver dollars were 41 millions in the first year and 90 millions in the second — an increase in value of nearly 120 per cent. These two rates of increase, 42 per cent and 120 per cent, although they represent exactly the same facts, do not agree with each other; yet the American merchant reckons the values one way, and the Mexican merchant the other. In a sense both are right; that is to say, both are true statements of the comparative value of the articles imported, one of the value in gold and the other of the value in silver. If the value were to be measured in iron, copper, coal, cotton, or any other article, we should have as many other different "values," and no two of them would necessarily agree.

"The value of wealth," therefore, is an incomplete phrase; to be definite, we should say, "the value of wealth in terms of gold," or in terms of some other particular kind of wealth. Hence we cannot employ such values for comparing different groups of wealth, except under certain conditions, and to a limited degree. To compare the wealth values of distant places or times — as America and China, Ancient Rome and Modern Italy — will inevitably give conflicting and unsatisfactory results.

§ 2. Property

To *own* wealth is to have a right to its *benefits*. Thus to own a loaf of bread means nothing more nor less than to have the right to benefit by it, *i.e.*, to eat it, sell it, or otherwise employ it to satisfy one's desires. To own a suit of clothes is to have the right to wear it. To own a carriage is to have the right to drive in it or otherwise utilize it as long as it lasts. To own a plot of land means to have the right to use it forever. The ultimate objects for which wealth exists are the *benefits* which it confers. If some one should give you a house on condition that you should never use it, sell it, rent it, or give it away, you might be justified in refusing it as worthless.

Many articles confer benefits on their owners by yielding them money. The benefit to the landlord from the land or building which he lets is the receipt by him of rent. The benefit to the owners

of a railway from the railway is the receipt by them of their dividends. But not all benefits, of course, are simply the receipt of money, and even the receipt of money is not an ultimate benefit, but only a means to enjoyments.

Benefits may also be rendered by human beings. Such benefits are usually called services or work done. When rendered by things rather than persons, benefits are commonly called uses.

Sometimes benefits consist of positive advantages and sometimes of the prevention of disadvantages. To be more exact, benefits mean either *desirable events obtained* or *undesirable events averted* by means of wealth or human beings. For example, when a loom changes yarn into cloth, the transformation is a desirable change due to the loom; it is a benefit conferred or performed by the loom. The benefit from a plough is the turning up of the soil. The benefits or services performed by a bricklayer consist in the laying of bricks. The benefits or uses conferred by a fence around a farm consist in preventing the cattle from roaming away. The dikes in Holland confer the benefit of keeping out the ocean. The benefits conferred by a diamond necklace consist in its pleasing glitter.

Benefits may be measured just as wealth may be measured, although the units of measurement are not, of course, the same. The measurement of services or benefits is usually rougher than that of wealth, because it is more difficult to establish units

of measure. The shelter of a house and the use or "wear" of a suit of clothes are difficult to measure accurately. To save trouble, benefits are usually measured by *time*, although, as soon as it becomes profitable to do so, the tendency is to establish a more satisfactory measure "by the piece."

Opposed to the benefits of wealth are its *costs*. Costs may be called negative benefits. The purpose of wealth is to benefit its owner; that is, to cause to happen what he desires to happen, and to prevent from happening what he desires not to happen. But often wealth can work no benefit without entailing some cost, *i.e.*, preventing what is desirable or occasioning what is undesirable. For instance, one cannot enjoy the benefits of a dwelling without incurring the costs of taking care of it.

Costs may, of course, be measured, just as benefits are measured — by number, by time, or by other appropriate units; and costs, when thus measured may, by price and value, be translated into terms of money precisely like the opposite items — benefits.

We must beware of assuming that cost is always in the form of an expenditure of money. Such money cost has received exaggerated importance in the eyes of business men and has tended to hide the more important and fundamental kind of cost, namely, labour. Even labour appears to the employer in the guise of a money cost — the expenditure of wages. This expenditure, however, is not itself

labour. Those who feel a real labour cost are the labourers themselves. It is by their physical and mental exertions that the work of the world is chiefly done.

In the last analysis payments of money from one member of society to another are neither income nor outgo to society as a whole. Yet when people talk of the cost of production, they usually think of money payments. The items called costs of production are mostly payments from person to person, at various stages of production. Each such item is two-faced and, in the final total, wipes itself off the slate. The only ultimate item of cost is *labour* cost or *efforts;* that is, all the experiences of an undesirable nature which are undergone in order that experiences of a desirable nature may be secured. In the last analysis *income consists of satisfactions and outgo of efforts* to secure satisfactions. Between efforts and satisfactions may intervene innumerable payments and operations, but they all must cancel out in the end. They are merely the machinery connecting the efforts and satisfactions. This is evident in the case of an isolated individual like Robinson Crusoe, who handles no money; but it is equally true of the most highly organized society It is only obscured by the fact that each member of such a society talks and thinks in terms of money.

Our real income is the receipt, not of money, but of what money is spent for, *i.e.*, what is often ca[illegible]

our "living." That is, money income is converted into or spent for real income in the form of food and clothing, or rather the use of food and clothing, and in the form of shelter, amusements, etc., *i.e.*, the use of dwelling-houses and of the other goods contributing direct benefits to human beings. These uses include the necessaries, comforts, and luxuries of life. The more money income it costs to acquire a given amount of real income, the higher the "cost of living," of which we hear so much to-day. The money which the workman is paid in wages is not his real wages, but only his nominal wages. The real wages are the workman's living for which that money is spent.

If a man has the right to *all* the prospective benefits which may come in the future from a particular article of wealth, he is said to have its complete ownership, or its ownership without encumbrance. If he has a right to only *some* of the benefits from a particular article of wealth, he is said to own that wealth partially, or to "have an interest" in it. When two brothers own a farm equally in partnership, each is a part owner; each has a half interest in the farm; that is, each has a right to half of the benefits to be had from the farm. What is divided between the two brothers is not the farm, but the benefits of the farm. To emphasize this fact, the law describes each brother's share as an "*undivided* half interest." Partnership rights are usually employed only when the number of co[illegible]ers is small.

When the number is large, the ownership is usually subdivided into shares of stock; but the principle is the same — each individual owns a right to a certain fraction of the benefits which come to the owners.

After the quantities of property of different kinds are measured, we may apply the same concepts of transfer, exchange, price, and value which have already been applied to wealth and benefits, each particular kind being measured in its own particular unit. Consider, for example, the property called stock in the Pennsylvania Railway Company. This is measured by the "number of shares," the share here being the unit of measurement.

If wealth were always owned in fee simple, *i.e.*, if there were no division of ownership, — no partnership rights, no shares and no stock companies, — there would be little practical need to distinguish property from wealth; and as a matter of fact, in the rough popular usage, any article of wealth, and especially real estate, is often inaccurately called a "piece of property." But the ownership of wealth is frequently divided; and this fact necessitates a careful distinction between the thing owned and the rights of the owners. Thus, a railroad is wealth. Its shares and bonded debt are rights to this wealth. Each owner of shares or bonds has the right to a fractional part of the benefits from the railway. The total of these and the other rights comprises the complete ownership of, or property in, the railway.

Besides the distinction between wealth and property rights, another distinction should here be noted. This is the distinction between property rights and certificates of those rights. The former are the rights to use wealth, the latter are merely the written evidence of those rights. Thus, the right to receive dividends from a railroad is property, but the written paper evidencing that right is a stock certificate. The right to a railway trip is a property right, the ticket evidencing that right is a certificate of property. The promise of a bank is a property right; the bank note on which that promise is engraved is a certificate of property.

The three really important and fundamental concepts which have been defined are wealth, benefits, and property. As each of them appears explicitly in exchange for money, it is convenient to employ some one collective term to embrace them all. The term we shall use for this purpose is "goods."

CHAPTER II

MONEY

§ 1. Money Fallacies

ONE purpose of the last chapter was to afford a general picture of the various kinds of goods — wealth, property, services — with which we meet in commerce. In this chapter and the next we shall give our attention to that particular group of goods — money and its substitutes — for which all other goods are commonly exchanged.

The subject of the present chapter, money, is beset with misunderstandings and fallacies. We may as well pause at the outset to mention, although we will not attempt to fully explain or expose, a few of the most common and persistent money fallacies and confusions. When the reader has finished the book, he will be able to refute their fallacious reasoning for himself.

First of all we must not make the mistake of confusing money with wealth. We have seen that wealth is different from and bigger than money. Yet it is astonishing how easy it is to forget this simple fact. One reason for forgetting it is because of the careless use of words, as when we say of a rich man "he has a great deal of money." Few persons, to be sure, are so naïve as to imagine that

a millionnaire is one who has a million dollars of actual money stored away; but they vaguely assume that somewhere or somehow "he has the money."

Among money fallacies is the idea that if one man "makes" money, some one else must "lose" it, since there is only a fixed stock of money in the world, and it seems clear that "whatever money the money-maker gets must come out of some one else's pocket." The flaw in this reasoning is the assumption that gains in trade are simply gains in actual money, so that in every business transaction only one party can be the gainer. If this were true, we might as well substitute gambling for business and for manufacturing; for in gambling the number of dollars won is equal to the number of dollars lost. As a matter of fact, however, it is not in order to obtain money that people engage in trade, but in order to obtain what money will buy, and that is precisely what both parties to a normal transaction eventually do obtain.

Again, some persons have tried to prove that the people of the earth can never pay off their debts because these debts amount to more than the existing supply of money. "If we owe money," it is argued, "we can't pay more money than there is." This assertion sounds plausible, but a moment's thought will show that the same money can be, and in fact is, paid over and over again in discharge of several different debts; not to mention that some debts are paid without the use of money at all.

A few years ago at a meeting of the American Economic Association a Western banker expressed the opinion that the total amount of money in the world ought to be equivalent to the total wealth of the world; else, he suggested, people would never be able to pay their debts. He explained that in the United States there were then twenty dollars of wealth for every dollar of money; and he inferred that therefore there was but one chance in twenty of a debtor's paying his debts. "I will give five dollars," he said, "to any one who can disprove that statement." When no one accepted the challenge, a wag suggested that it was because there was but one chance in twenty of getting the promised five dollars! The attempt to equalize money and wealth by increasing money twenty-fold would, as we shall see later, prove absolutely futile. The moment we increased the amount of money, the money value of all other forms of wealth would rise, and there would, therefore, still be a discrepancy between the amount of money and the money value of wealth.

A very persistent money fallacy is the notion that sometimes there is not enough money to do the world's business, and that unless at such times the quantity of money is increased, the wheels of business will either stop or slacken their pace. The fact is, however, that *any* quantity of money, whether large or small, will do the world's business as soon as the level of prices is properly adjusted to that quantity. In an article on this subject

a few years ago an editor of a popular magazine put this fallacy into the very title: "There is not enough money in the world to do the world's work." He said, "The money is not coming out of the ground fast enough to meet the new conditions of life." In reality, money is coming out of the ground faster than the "new conditions" require at the present level of prices, with the consequent result of raising prices.

A more subtle form of money fallacy is that which admits that money is not identical with wealth, but contends that money is an indispensable means of *getting* wealth. A very intelligent gentleman recently asserted that the railways of this country could never have been built in the early fifties had it not been for the lucky discovery of gold in California in 1849, which provided the "means by which we could pay for the construction of the railways." He overlooked the fact that the world does not get its wealth by buying it. One person may buy from another; but the world as a whole does not buy wealth, for the simple reason that there would be no one to buy it from. The world gets its railways, not by buying them, but by building them. What provides our railways is not the gold mines, but the iron mines. Even though there were not a single cent of money in the world, it would still be possible to have railways. The gold of California enriched those who discovered it because it enabled them to buy wealth of others; but it did not provide the world with railways any more than Robinson

Crusoe's discovery of money in the ship provided him with food.

If money could make the world rich, we should not need to wait for gold discoveries. We could make paper money. This, in fact, has often been tried. The French people once thought they were going to get rich by having the government print unlimited quantities of paper money. Austria, Italy, Argentina, Japan, as well as many other countries, including the American colonies, and the United States, have tried the same experiment with the same results — no real increase in wealth, but simply an increase in the amount of money to be exchanged for wealth.

A similar and very common fallacy is that to promote the circulation of money is to promote the acquisition of wealth. Frederick the Great tried to justify his wars on this ground. In a letter he said: "My numerous armies promote the circulation of money, and disburse impartially among the provinces the taxes paid by the people of the state." The idea back of such statements is that some gain is secured by artificially forcing money to change hands. Of course the circulation of money is not, of itself, of any importance unless, with it, occurs an increase of wealth.

The idea that money is the essence of wealth was one of the ideas which gave rise to a set of doctrines and practices, called Colbertism or Mercantilism, constituting the earliest so-called "school" of political economy. Colbert was a distinguished minister

under Louis XIV of France in the seventeenth century, and a firm believer in the theory that, in order to be wealthy, a nation must have an abundance of money. His theory became known as Mercantilism because it regarded trade between nations in the same light in which merchants look upon their business — each measuring his prosperity by the difference between the amount of money he expends and the amount he takes in. To keep money within the country, Colbert and the Mercantilists advocated the policy now known as "protection."

To-day it is generally understood that, in trade between nations, as in that between individuals, both parties may gain in an exchange transaction; but the mercantilistic fallacy that a nation may get rich by selling more than it purchases, and collecting the "favourable balance of trade" in money, still forms one of the popular bases of protectionism in the United States. The more intelligent protectionists give quite different reasons for a protective tariff, but the old fallacious reason still appeals to the multitude. They continue to think that by putting up a high tariff so that people are prevented from spending money abroad and are compelled to keep it at home, the country will in some way be made richer. One reason for the persistence of this fallacy is the continued use of the misleading phrase "favourable balance of trade" to indicate an excess of exports over imports, and "unfavourable balance of trade" to indicate the opposite condition.

There is a common money fallacy concerning the rate of interest. The rate of interest may be defined as the ratio of an annual payment of money to the lump sum of money which that annual payment will buy. So the rate of interest is often called the "price of money," and it is inferred that the rate of interest depends upon the quantity of money on the market. The trade journals tell us that "money is easy" in Wall Street, meaning that interest is low, or that it is easy to borrow money. Or we are told that "the money market is tight," meaning that it is hard to borrow money. We often hear the argument that the present high cost of living cannot be due to any plentifulness of money, because if money were really plentiful, it would be "cheap," *i.e.*, the rate of interest would be low. Probably the great majority of unthinking business men believe that interest is low when money is plentiful, and high when money is scarce. But this view is fallacious and does not agree with the facts.

We must remember that interest is not only the price *of* money, but also the price *in* money. Thus the rate of interest is found by dividing, say, the $5 paid per year by the $100 cash for which it is paid. Both the numerator and the denominator of this fraction are expressed in terms of money. Inflation of money ultimately works equally on both sides.

We should beware of the phrase "the price of money," for it has two meanings. It may mean the *rate of interest*, which is a ratio of exchange between

two moneys — the price of money capital in terms of money income; or it may mean the *purchasing power* of money over other goods — the amount of other goods for which a given amount of money can be exchanged. The abundance of money will, as we shall see, reduce its price in the latter sense of purchasing power over goods, but it need not on that account reduce its price in the former sense of the rate of interest.[1]

We shall find that the real importance of the quantity of money lies, not in the so-called money market — the loan market — but in the general level of prices. Curiously enough, in the popular mind the exact opposite is commonly supposed. It is believed that money greatly affects the money market, but has little or nothing to do with the high cost of living.

Money fallacies of the kinds we have described must be carefully avoided. We should be on our guard against every proposition concerning money. "Making" money, for instance, is a catch phrase, used without any definition. Properly speaking,

[1] One reason for this idea is that a banker usually looks upon money in relation to his reserves. If the bank reserve is low, he raises the rate of interest to "protect" his reserve, while if the reserve is abundant, he reduces the rate of interest in order to reduce the reserve. The banker is constantly watching his reserve, and has to adjust the rate of interest with respect thereto. But he should not judge the amount of money in circulation by the amount of money inside his vaults.

nobody can "make" money except the man in the mint. The rest of us may gain wealth, but, unless we are counterfeiters, we cannot literally "make" money.

We live in a complicated civilization in which we talk in terms of money. Money has come to be a sort of veil which hides the other and more important wealth of the world.

§ 2. Prices in General and in Particular

The chief purpose of this book is to study the *purchasing power of a monetary unit* — let us say, the dollar. But the purchasing power of the dollar is simply the reciprocal of the *general level of prices*. To say that prices have doubled is the same thing as to say that the purchasing power of the dollar has been cut in two. Our problem is therefore simply to study the general principles which determine the rise or fall of prices, a subject which to-day is receiving world-wide attention under the head of the "high cost of living."

Unfortunately few of those people who talk so glibly about the high cost of living realize the monetary side of the problem. Not only do they fix attention on the goods side, but they make the mistake of thinking that a *general* rise of prices is explainable on the same principles of supply and demand as apply to the rise of a *particular* price. They think that they can explain the general rise of prices by explaining the rise of each individual

price. One might as well try to explain the rise of the tides by observing the causes which raise up individual waves.

The truth is that so far from the general level of prices depending on individual prices, each individual price depends in part on the general level of prices.

Thus the price of sugar is a ratio between sugar and money. Any one who buys sugar balances in his mind the importance of the sugar to him as against the importance of the money which he has to pay for it. In making this comparison, the money stands in his mind *for the other things which it might buy if not spent for sugar.* If this *general* purchasing power of the dollar is great, money will seem precious in his mind, and he will be more loath to part with a given amount of it for sugar than if its purchasing power over other things is small; that is, the greater the power of money to purchase things in general, the less of it will be offered for sugar in particular, and the lower the price of sugar will therefore become. In other words, the lower the general price level, the lower will be the price of sugar. In still other words, the price of sugar must *sympathize* with prices in general. If they are high, it will tend to be high, and if they are low, it will tend to be low. Before the purchaser of sugar can decide how much money he is willing to exchange for it, he must have some idea of what else he could buy for his money.

This explains why a traveller feels at first so help-

less in a foreign country when he is told the prices of goods in terms of unfamiliar units. If the traveller has never heard before of kronen, gulden, rubles, or milreis, any prices expressed in these units will mean nothing to him. He cannot say how many of any one of these units he is willing to pay for any given article until he knows how the purchasing power of that unit compares with the unit to which he is accustomed. There must always be in the minds of those who use money some idea of its purchasing power. This needs emphasis because it is so often overlooked. Although the purchasing power of money is assumed, we are usually as unconscious of it as we are of the background of a picture against which we see and unconsciously measure the figures in the foreground.

Let us, then, once for all, give up any thought of studying the prices in the price level singly, and instead, consider them in the mass. We shall see that it is a question of the flow of money and its substitutes, and the flow of goods in return for them. It is just as possible to study the general level of prices independently of particular prices as it is to study the general tides of the ocean independently of its particular waves. To do this, however, will require a study of money.

§ 3. The Nature of Money

It is a very curious fact that money, though a most convenient device in practice, is always a stum-

bling-block in theory. At the beginning of this chapter we pointed out some of the *imagined* functions of money that do not belong to it. We are now ready to ask: What are the *real* functions of money?

We have defined money primarily as wealth *generally acceptable in exchange*. But when this definition was framed we had not yet defined *property rights* as a form of goods distinguishable from concrete wealth; and these rights, especially in the form of bank-notes, are also generally acceptable in exchange. We therefore now extend our definition of money to include all *goods* generally acceptable in exchange for other goods. The term money is also used loosely to refer to the certificate of such property right. Thus we generally think of the paper bank-note itself as money rather than the right which it certifies.

The facility with which money may be exchanged or its general acceptability is the chief characteristic of money. This general acceptability may be reenforced by law, the money thus becoming "legal tender." [1] But such reënforcement is not essential. All that is necessary in order that any good may be money is that general acceptability shall attach to it. On the frontier, without any legal sanction, money is sometimes gold dust or gold nuggets.

[1] Legal-tender money is money which may be legally tendered or offered by a debtor to his creditor in discharge of any debts expressed in terms of money.

In the colony of Virginia it was tobacco. Among the Indians in New England it was wampum.

How does it happen that any particular commodity comes into use as money? Not originally because a government so decreed, but because the commodity was *readily salable* on account of its utility for direct commodity uses quite other than monetary. It is not likely that the monetary use was at first even thought of. It simply grew gradually. Thus gold was readily sold and resold. Many wanted it for jewellery, and many others could easily be induced to accept it in exchange, even if they had no personal use for it themselves; for they knew they could resell it at any time to some one who had such a use for it. Gradually it became customary to accept it with no thought of any other use than to resell it or pass it on indefinitely. Gold has finally survived as the most important form of money. It is easily transportable and is durable.

Practically all metallic money to-day in civilized countries is "coined," but uncoined gold nuggets or bars are just as truly money if they are generally acceptable in exchange. At bottom, coining is merely putting on a certification of weight and fineness. "Coining" puts the finishing touch on money as distinct from other exchangeable goods. As long as money is still, let us say, gold nuggets or gold dust, there is nothing definitely to distinguish it as money from other goods of high exchangeability except its higher exchangeability, or, to put

it in another way, there is little reason why other articles almost as exchangeable as the gold nuggets and gold dust should not be called money.

In the pre-coinage stage the world was in a transition period between a system of barter and a system of purchase-and-sale. Gradually barter became obsolete because of its inconveniences and annoyances; thus under the preëxisting system of out and out barter in which every article is exchanged directly against every other, there were between ten articles 45 price ratios as against 10 if money were used; between one hundred articles there were 4950 such ratios instead of 100. Alfred Russell Wallace, when travelling in the Malay Archipelago, where only barter existed, had to keep on hand a supply of knives, cloth, sago, and numerous other commodities in order to be able to do any trading.

Barter is also inconvenient because some of the various goods which have to be used — for example, knives — are not easily subdivided.

Nevertheless, barter is not yet entirely extinct and probably never will be. Farm labour is partly paid in farm products, and country clergymen are sometimes paid by their parishioners in the produce of their farms. In factory towns the employees are sometimes paid in "truck" at "the company store." In fact, even in the most highly organized and modern markets with every monetary and credit facility, barter is still practised in certain cases.

Servants receive part of their pay in board and lodging. Other occasional sporadic cases of barter are of daily occurrence. Yet these cases are insignificant in comparison with the colossal exchanges effected by money and checks.

There are various degrees of exchangeability which must be transcended before we arrive at real money. Of all kinds of goods, one of the *least* exchangeable is real estate. It is often difficult to find a person who wants to buy a particular piece of real estate. A mortgage on real estate is one degree more exchangeable. Yet even a mortgage is less exchangeable than a well-known and safe corporation security or a government bond. One degree more exchangeable than a government bond is a time bill of exchange; one degree more exchangeable than a time bill of exchange is a sight draft; while a check is almost as exchangeable as money itself. Yet no one of these is really money; for none of them is "*generally* acceptable."

If we confine our attention to present and normal conditions, and to those means of exchange which either are money or most nearly approximate it, we shall find that money itself belongs to a general class of goods which we may call "circulating media." Circulating media may be any kind of goods which, whether generally acceptable or not, do actually, for their chief purpose and use, serve as a means of exchange.

Circulating media consist of two chief classes:

(1) money; (2) bank deposits. By means of checks, bank deposits serve as a means of payment in exchange for other goods. A check is the evidence of the transfer of bank deposits. It is acceptable to the payee only by his consent. It would not be generally accepted by strangers. Yet by checks, bank deposits, even more than money, do actually serve as a medium of exchange. In this country, bank deposits subject to check, or, as they are sometimes called, "deposit currency," perform over 90 per cent of all exchange transactions.

But although a bank deposit transferable by check is included in circulating media, it is not money. A bank *note*, on the other hand, is both circulating medium and money. Between these two lies the final line of distinction separating what is money and what is not. The line is delicately drawn, especially in the case of such checks as cashier's checks or certified checks; for the latter are extremely similar, in respect to acceptability, to bank-notes. Each is a demand liability on a bank, and each confers on the holder the right to draw money. Yet while a bank-note is *generally* acceptable in exchange, a check is acceptable only by special consent of the payee. Real money is what a payee accepts without question, because he is induced to do so either by "legal tender" laws or by a well-established custom or both.

Of real money there are two kinds: primary and fiduciary. Money is called *primary* if it is a

commodity, any given unit of which has just as much value in some other use as it has in monetary use; that is, primary money is a commodity which has its full value even if it is not used as money or even if it is changed to a form in which it will not circulate as money. For instance, gold coins in the United States are primary money, since their value will be undiminished even if they are melted into gold bullion. In the same way, the tobacco money of Virginia in colonial days was primary, having as much value as tobacco as it had as money.

Fiduciary money, on the other hand, is money the value of which depends partly or wholly on the owner's confidence that he can exchange it for primary money, or at any rate for other goods, *e.g.*, for primary money at a bank or government office or for discharge of debts or purchase of goods of merchants.[1] For instance, a silver dollar in the United States is fiduciary money, since it is worth a dollar only because of the public confidence that the government will take it in taxes and the people in discharge of debts and for other purposes on equal terms with a dollar of gold. If a silver dollar be melted into bullion, it will, unlike the gold dollar,

[1] Some economists have proposed that what is here called "fiduciary" money should not be called money at all; that is, that the term "money" should be restricted to primary money. It seems preferable, however, here as elsewhere, to follow ordinary usage. There are instances where countries have for a time had no primary money, but only fiduciary money.

lose a large part of its value. That is, the bullion in a silver dollar is not worth a dollar; it is only worth about forty cents. Our other silver coins are worth as bullion even less in proportion to their value as money, and our nickel and bronze coins are worth still less in proportion. Bank-notes, government notes, and other forms of paper money are still more striking examples of fiduciary money, being practically worthless as paper, but having a high value as money, owing to the confidence that they can be exchanged for gold at the banks or the government treasury. The larger part of the money in use in the United States is fiduciary money, the chief examples being silver dollars, fractional silver, minor coins, silver certificates, gold certificates, government notes (nicknamed "green-backs"), and bank-notes. The exact nature of these various kinds of money constitutes a subject outside the purpose of this book. The reader can, however, learn much as to their nature for himself, by reading the inscriptions on the various

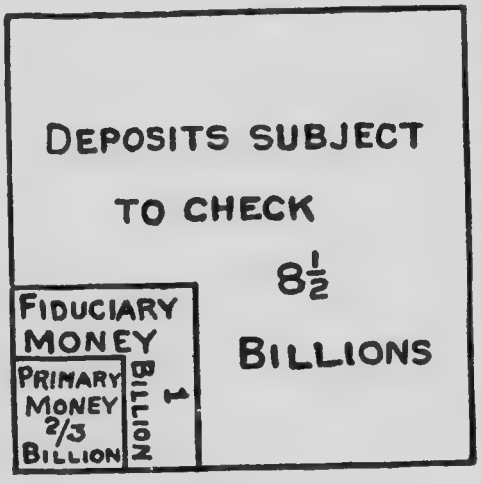

FIG. 1

forms of money, which, from time to time, pass through his hands.

The qualities of primary money which make for exchangeability are numerous. The most important are portability, durability, and divisibility. The chief quality of fiduciary money, which makes it exchangeable, is its redeemability in primary money, or else its imposed character of "legal tender."

Figure 1 indicates the classification of all circulating media in the United States. It shows that the total amount of circulating media is slightly over ten billions, of which eight and one-half billions are bank deposits subject to check, and one and two-thirds billions, money; and that of this one and two-thirds billions of money one billion is fiduciary money and only two-thirds of a billion primary money.

CHAPTER III

THE EQUATION OF EXCHANGE

§ 1. Arithmetical Illustration

In the present chapter we shall study the purchasing power of money in a preliminary way, excluding the consideration of bank deposit — or check — circulation and confining our attention to the circulation of money, primary and fiduciary. In the United States our only primary money is gold coin. The fiduciary money includes token coins and paper money.

Checks aside, we may classify exchanges into three groups: the exchange of money against money; or "changing money"; the exchange of goods against goods, or "barter"; the exchange of money against goods, or *purchase and sale*. Only the last-named species of exchange involves what we call the *circulation* of money. The circulation of money signifies, therefore, the aggregate amount of its transfers against goods. All money held for circulation, *i.e.*, for use in payment for goods purchased, is called *money in circulation*. This includes the money in the pockets and purses of the people and in the tills and safes of merchants. In the United States this includes all money except what is in the vaults of the banks and of the United States government.

If for the present we overlook the influence of checks, we may say that the price level depends on only three sets of causes: (1) the quantity of money in circulation; (2) its "efficiency" or velocity of circulation (or the average number of times a year a dollar is exchanged for goods); and (3) the volume of trade (or amount of goods per year bought by money). The so-called "quantity theory" (*i.e.*, the theory that prices vary proportionally to money) has often been incorrectly formulated, but it is at least correct in the sense that the level of prices varies directly with the quantity of money in circulation, provided the velocity of circulation of that money and the volume of trade effected by means of it are not changed. This theory will be made clearer by the "equation of exchange," which is now to be explained.

The equation of exchange is a statement, in mathematical form, of the total transactions effected in a certain period in a given community. It is obtained simply by adding together the equations of exchange for all individual transactions. Suppose, for instance, that a person buys 10 pounds of sugar at 7 cents per pound. This is an exchange transaction, in which 10 pounds of sugar have been regarded as equivalent to 70 cents, and this fact may be expressed thus: 70 cents = 10 pounds of sugar multiplied by 7 cents a pound. Every other sale and purchase may be expressed similarly, and by adding them all together we get the equation

of exchange *for a certain period in a given community.* That is, the left side of this equation represents all the money spent and the right represents the value of all goods bought within the given period. During this period, however, the *same* money may serve, and usually does serve, for *several* transactions. For that reason, the left, or money, side of the equation is, of course, several times the total amount of money in circulation. The money side may evidently be considered as the product of the quantity of money multiplied by the rapidity of its circulation, *i.e.*, the number of times it is exchanged for goods.

The important magnitude called the velocity of circulation or rapidity of turnover means simply the quotient obtained by dividing the total money payments for goods in the course of a year by the average amount in circulation in an entire community and is a sort of average of the rates of turnover of different persons. Each person has his own rate of turnover, which he can readily calculate by dividing the amount of money he expends per year by the average amount he carries. The goods side of the equation is made up of the quantities of goods multiplied by their respective prices.

Let us begin with the money side of the equation of exchange. If the number of dollars of money in a country is 5,000,000, and the average velocity of circulation of these five million dollars is twenty times per year, then the total amount of money

expended (for goods) during any year is $5,000,000 × 20, or $100,000,000. This is the *money* side of the equation of exchange.

Since the money side of the equation is $100,000,000, the *goods* side must be the same. For if $100,000,000 has been spent for goods in the course of the year, then $100,000,000 worth of goods must have been sold in that year. In order to avoid the necessity of writing out the quantities and prices of the innumerable varieties of goods which are actually exchanged, let us assume for the present that there are only three kinds of goods — bread, coal, and cloth; and that the sales are: —

200,000,000 loaves of bread at $.10 a loaf,
10,000,000 tons of coal at $5.00 a ton, and
30,000,000 yards of cloth at $1.00 a yard.

The total value of these transactions is evidently $100,000,000, *i.e.*, $20,000,000 worth of bread plus $50,000,000 worth of coal plus $30,000,000 worth of cloth. The equation of exchange, therefore, is as follows: —

$$\begin{aligned} \$5{,}000{,}000 \times 20 = {} & 200{,}000{,}000 \text{ loaves} \times \$\ .10 \text{ a loaf} \\ & + \ 10{,}000{,}000 \text{ tons} \quad \times \$5.00 \text{ a ton} \\ & + \ 30{,}000{,}000 \text{ yards} \ \times \$1.00 \text{ a yard.} \end{aligned}$$

This equation contains, then, on the money side two magnitudes: (1) the quantity of money, and (2) the number of times it circulates or is "turned over" in a year; and on the goods side two *groups* of magnitudes in two columns: (1) the quantities

of goods exchanged in a year (loaves, tons, yards), and (2) the prices of these goods ($.10 per loaf, $5.00 per ton, and $1.00 per yard). The equation shows that these four sets of magnitudes are mutually related. Because this equation must be fulfilled, the prices must bear a relation to the three other sets of magnitudes — quantity of money, rapidity of circulation, and quantities of goods exchanged. Consequently, these prices must, as a whole, vary proportionally with the quantity of money and with its velocity of circulation, and inversely with the quantities of goods exchanged.

Suppose, for instance, that the quantity of money were doubled, while its velocity of circulation and the quantity of goods exchanged remained the same. Then, since the equation of exchange must continue to hold true, it would be quite impossible for prices to remain unchanged. The money side would now be $10,000,000 × 20 times a year, or $200,000,000; whereas, if prices should not change, the goods would remain $100,000,000 and the equation would be violated. Since exchanges, individually and collectively, always involve an equivalent *quid pro quo*, the two sides *must* be equal. Therefore, under the given conditions, prices must change in such a way as to raise the goods side from $100,000,000 to $200,000,000. This doubling may be accomplished by an even or by an uneven rise of prices, but *some sort of a rise of prices there must be.* If the prices rise evenly, they will

evidently all be exactly doubled, so that the equation will read: —

$$\begin{aligned} \$10{,}000{,}000 \times 20 = {} & 200{,}000{,}000 \text{ loaves} \times \$ \ .20 \text{ per loaf} \\ & + \ 10{,}000{,}000 \text{ tons} \ \times \$10.00 \text{ per ton} \\ & + \ 30{,}000{,}000 \text{ yards} \ \times \$ \ 2.00 \text{ per yard.} \end{aligned}$$

If the prices rise unevenly, the doubling must evidently be brought about by compensation; if some prices rise by less than double, others must rise by enough more than double to exactly compensate.

But whether all prices increase uniformly, each being exactly double, or some prices increase more and some less (so as still to double the total money-value of the goods purchased), the prices *are doubled on the average*. This proposition is usually expressed by saying that the "general level of prices" is raised twofold. From the mere fact, therefore, that the money spent for goods must equal the quantities of those goods multiplied by their prices, it follows that the level of prices must rise or fall according to changes in the quantity of money, *unless* there are changes in its velocity of circulation or in the quantities of goods exchanged.

Just as changes in the quantity of money affect prices, so will changes in the other factors — quantities of goods and velocity of circulation — affect prices. In the case of a change in the velocity of circulation, the change is very similar to that seen in the case of a change in the quantity of money. Thus a doubling in the velocity of circulation of

money will double the level of prices, provided the quantity of money in circulation and the quantities of goods exchanged for money remain as before. The equation will change (from its original form) to the following: —

$$\begin{aligned} \$5{,}000{,}000 \times 40 = {} & 200{,}000{,}000 \text{ loaves} \times \$ \ .20 \text{ a loaf} \\ & + \ 10{,}000{,}000 \text{ tons} \ \times \$10.00 \text{ a ton} \\ & + \ 30{,}000{,}000 \text{ yards} \ \times \$ \ 2.00 \text{ a yard}; \end{aligned}$$

or else the equation will assume a form in which some of the prices will more than double, and others less than double by enough to preserve the same total value of the sales.

Again, a doubling in the quantities of goods exchanged will cut in two the height of the price level, *provided* the quantity of money and its velocity of circulation remain the same. Under these circumstances the equation will change (from its original form) to: —

$$\begin{aligned} \$5{,}000{,}000 \times 20 = {} & 400{,}000{,}000 \text{ loaves} \times \$ \ .05 \text{ a loaf} \\ & + \ 20{,}000{,}000 \text{ tons} \ \times \ 2.50 \text{ a ton} \\ & + \ 60{,}000{,}000 \text{ yards} \ \times \ .50 \text{ a yard}; \end{aligned}$$

or else it will assume a form in which some of the prices are more than halved, and others less than halved, so as to preserve the equation.

Finally, if there is a simultaneous change in two or all of the three influences, *i.e.*, quantity of money, velocity of circulation, and quantities of goods exchanged, the price level will be a compound or resultant of these various influences. If, for example,

the quantity of money is doubled, and its velocity of circulation is halved, while the quantity of goods exchanged remains constant, the price level will be undisturbed. Likewise, it will be undisturbed if the quantity of money is doubled and the quantity of goods is doubled, while the velocity of circulation remains the same. *To double the quantity of money, therefore, does not always double prices.* We must distinctly recognize that the quantity of money is only one of three factors, all equally important in determining the price level.

§ 2. Mechanical Illustration

The equation of exchange has now been expressed by an arithmetical illustration. It may be represented visually by a mechanical illustration. This is embodied in Figure 2, which represents a mechanical balance in equilibrium, the two sides of which symbolize respectively the money side and the goods

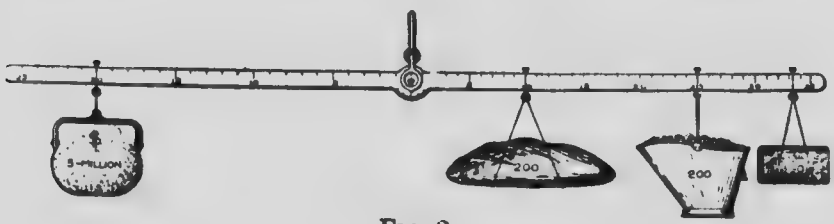

FIG. 2

side of the equation of exchange. The weight at the left, symbolized by a purse, represents the money in circulation; the leverage or distance from the fulcrum at which the purse is hung represents the

efficiency of this money, or its velocity of circulation. The product of the weight by its leverage is exactly balanced by or equal to corresponding products on the opposite side. On the right side are three weights, representing bread, coal, and cloth, and symbolized respectively by a loaf, a coal scuttle, and a roll of cloth. The leverage, or distance of each from the fulcrum, represents its price. In order that the leverages at the right may not be inordinately long, we have found it convenient to reduce the unit of measure of coal from tons to hundredweights, and that of cloth from yards to feet, and consequently to enlarge correspondingly the number of units (the measure of coal changing from 10,000,000 tons to 200,000,000 hundredweights, and that of the cloth from 30,000,000 yards to 90,000,000 feet). In these new units the price of coal becomes 25 cents per hundredweight (in place of $5.00 per ton) and that of cloth becomes 33⅓ cents per foot (in place of $1.00 per yard).

If the purse at the left becomes heavier, it is evident that, in order to maintain the balance, some of the weights at the right must be heavier also or must be moved toward the right, or else the purse itself must be moved toward the right. If, now, we assume that the last and first of these three changes do not occur, the middle one must occur. In other words, if the position of the purse remains unaltered (*i.e.*, if the velocity of circulation of money does not change), and if the weights at the

right remain unaltered (*i.e.*, if the volume of trade does not change), then some or all of these weights must move to the right (*i.e.*, the prices of goods must increase). If these prices increase uniformly, they will increase in the same ratio as the increase in money; if they do not increase uniformly, some will increase more and some less than this ratio, maintaining an average. Likewise, it is evident that if the velocity of circulation of money increases, *i.e.*, if the leverage at the left lengthens, and if the money in circulation (the purse) and the trade (the various weights at the right) remain the same, there must be an increase in prices (lengthening of the leverages at the right). Again, if there is an increase in trade (represented by an increase in weights at the right), and if the velocity of money (left leverage) and the quantity of money (left weight) remain the same, there must be a decrease in prices (right leverages).

In general, any change in one of these four sets of magnitudes must be accompanied by such a change or changes in one or more of the other three as shall maintain equilibrium.

As we are interested in the average change in prices rather than in the prices individually, we may simplify this mechanical representation by hanging all the right-hand weights at one average point, so that the leverage shall represent the average of prices. This average, of 10 cents per loaf, 25 cents per hundredweight, and $33\frac{1}{3}$ cents per foot,

is found by dividing the total value (10 cents times 200 million loaves, plus 25 cents times 200 million hundredweight, plus $33\frac{1}{3}$ cents times 90 million feet, or $100,000,000) by the total number of units

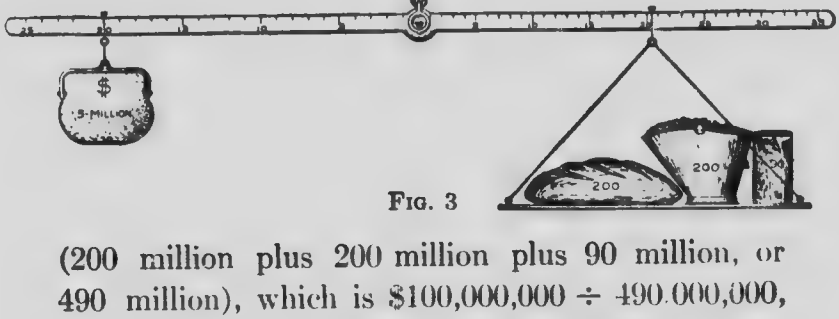

FIG. 3

(200 million plus 200 million plus 90 million, or 490 million), which is $100,000,000 ÷ 490,000,000, or 20.4 cents per unit. This leverage is a so-called "weighted average" of the three original leverages, the "weights" being literally the weights hanging at the right.

This averaging of prices is represented in Figure 3, which visualizes the fact that the average price of goods (right leverage) varies directly with the quantity of money (left weight), directly with its velocity of circulation (left leverage), and inversely with the volume of trade (right weight).

§ 3. Algebraic Illustration

To put these relations in general terms, let
M stand for money in circulation,
V, its velocity of circulation,
p, p', p'', etc., the prices of various goods,
Q, Q', Q'', etc., the quantities of those goods sold.

Then we may write the formula as follows: —

$$\begin{aligned} MV = \; & pQ \\ & + p'Q' \\ & + p''\,Q'' \\ & + \text{etc.} \end{aligned}$$

MV evidently represents the amount of money expended for goods during the year. On the other side of the equation, pQ, $p'\,Q'$, and so on, represent the values of the various goods bought. If in this equation M is doubled (and V and the Q's remain unchanged), then the p's will, on the average, be doubled; if V is doubled (and M and the Q's are unchanged), the p's will be doubled also; while if the Q's are doubled (and M and V are unchanged), the p's will be halved.

The right side of this equation is the sum of terms of the form pQ, a price multiplied by a quantity bought. It is customary in mathematics to abbreviate a sum of terms (all of which are of the same form) by using "Σ" as a prefix to pQ. The Greek letter "Σ," called "sigma," is the equivalent of the English letter "S," the initial letter of "sum," and is employed as a symbol of summation. This symbol does not signify a *magnitude* as do the symbols M, V, p, Q, etc. It signifies merely the *operation* of addition, and should be read "the sum of terms of the following type." The equation of exchange may therefore be written: —

$$MV = \Sigma pQ.$$

We may, if we wish, further simplify the right side by writing it in the form PT, where P is an average of all the p's, and T is the sum of all the Q's. T then represents in one magnitude the volume of trade of the

community. The equation thus simplified ($MV = PT$) is the algebraic interpretation of the mechanical illustration given in Figure 3, where all the goods, instead of being hung separately, as in Figure 2, are combined and hung at an average point representing their average price.

§ 4. The "Quantity Theory of Money"

To recapitulate, we find then that, under the conditions assumed, the price level varies: (1) directly as the quantity of money in circulation (M); (2) directly as the velocity of its circulation (V); (3) inversely as the volume of trade done by it (T). The first of these three relations needs special emphasis. It constitutes the "quantity theory of money."

So important is this principle, and so bitterly contested has it been, that we shall illustrate it further. By "the quantity of money" is meant the number of dollars (or other given monetary units) in circulation. This number may be changed in several ways, of which the four named below are most important. A statement of these four will serve to picture to our mind the meaning of the conclusions we have reached and to reveal the fundamental peculiarity of money on which they rest.

I. As a first illustration, let us suppose the government to double the *denominations* of all money; that is, let us suppose that what has been hitherto a half dollar is henceforth *called* a dollar, and that what has

been hitherto a dollar is henceforth called two dollars. Evidently the number of "dollars" in circulation will then be doubled; and the price level, measured in terms of the new "dollars," will be double what it would otherwise be. Every one will pay out the *same coins* as if no such law were passed. But he will, in each case, be paying twice as many "dollars." For example, if $3 formerly had to be paid for a pair of shoes, the price of this same pair of shoes will now become $6. The number of dollars in circulation (M) having been doubled (its velocity of circulation (V) and the volume of trade (T) remaining the same), the average of the prices (P) must be doubled.

II. For a second illustration, suppose the government cuts each dollar in two, coining the halves into new "dollars"; and, recalling all paper notes, replaces them with double the original number — two new notes for each old one of the same denomination. In short, suppose money not only to be *renamed*, as in the first illustration, but also *reissued*. Prices in the debased coinage will again be doubled just as in the first illustration. Wherever a dollar had been paid before debasement, two dollars — *i.e.*, two of the old halves coined into two of the new dollars — will now be paid instead.

In the first illustration, the increase in quantity was simply nominal, being brought about by renaming coins. In the second illustration, besides renaming, the further fact of recoining is introduced.

In the first case, the number of actual pieces of money of each kind was unchanged, but their denominations were doubled. In the second case, the number of pieces is also doubled by splitting each coin and reminting it into two coins, each of the same nominal denomination as the original whole of which it is the half, and by similarly doubling the paper money.

III. For a third illustration, suppose that, instead of doubling the number of dollars by splitting them in two and recoining the halves, the government *duplicates* each piece of money in existence and presents the duplicate to the possessor of the original. (We must in this case suppose, further, that there is some effectual bar to prevent the melting or exporting of money. Otherwise the quantity of money in circulation will not be doubled; much of the increase will escape.) If the quantity of money is thus doubled, prices will also be doubled just as truly as in the second illustration, in which there were exactly the same number of coins as now under consideration as well as the same denominations. The only difference between the second and the third illustrations will be in the size and weight of the coins. The weights of the individual coins, instead of being reduced, will remain unchanged; but their number will be doubled. This doubling of coins must have the same effect as the 50 per cent debasement; that is, it must have the effect of doubling prices.

IV. The force of the third illustration becomes even more evident, if (in accordance with the presentation of Ricardo) we pass back by means of a seigniorage from the third illustration to the second. That is, after duplicating all money, let the government subtract half of each coin, thereby reducing the weight to that of the debased coinage in the second illustration, and removing the only point of distinction between the two. This "seigniorage" or charge for coinage made by the sovereign will not affect the money value of the coins, so long as their *number* remains unchanged. Prices will remain at exactly the same level as before the abstraction of seigniorage.

Thus to double the quantity of money will double prices in whatever way the doubling may be brought about, — unless there should occur at the same time some change in the velocity of circulation of money or in the volume of trade.

The reader may ask whether some change in the velocity of circulation of money or in the volume of trade will not necessarily occur as a direct consequence of the increased quantity of money. The answer to this question is in the negative, but this answer will be better understood after we have seen on what causes velocity of circulation and volume of trade depend. In the present chapter we are concerned merely to show that an increase in money will necessitate a rise in prices *provided* the velocity of circulation and volume of trade do remain the same.

There are many historical instances of raising prices by inflating the currency. At present, Argentina has an inflated paper currency, and prices in paper pesos are a little more than double the prices in the original gold pesos.

The quantity theory, then, asserts that (provided velocity of circulation and volume of trade are unchanged) if we increase the *number* of dollars, whether by renaming coins, by cutting them in two, by duplicating them, or by any other means, prices will be increased in the same proportion. It is the number, and not the weight, that is essential. As long as the number of dollars remains the same each dollar will have the same purchasing power or value, no matter what the weight may be. This fact needs great emphasis. It is a fact which differentiates money from all other goods and explains the peculiar manner in which its purchasing power is related to other goods.

In the case of sugar or any other ordinary commodity it is the actual *weight* and not the number of units in which that weight is expressed which is the important thing. Thus if the quantity of sugar in a community is changed from 1,000,000 hundredweight to 1,000,000 pounds, it does not follow that a pound will have the value in exchange previously possessed by a hundredweight. But if the money in circulation is changed from 1,000,000 units of one weight to 1,000,000 units of a lighter weight, the value of the new and lighter coins will

be just as great as was the value of the old and heavy ones, for we have seen from the equation of exchange that their purchasing power will be unchanged.

The quantity theory of money thus rests, ultimately, upon the fundamental peculiarity which money alone of all goods possesses — the fact that it has no definite relation to the satisfaction of human wants, but only the *power to purchase* things which do have such satisfying power.

CHAPTER IV

BANK DEPOSITS SUBJECT TO CHECK

§ 1. The Mystery of Circulating Credit

We are now ready to explain the nature of bank-deposit currency, or circulating credit. Credit, in the sense here employed, is the promise of one party (called the debtor) to pay money to another party (called the creditor). Bank deposits subject to check are the claims against the bank of a special class of creditors known as depositors, by virtue of which they may, on demand, draw by check specified sums of money from the bank. Since no other kind of bank deposits will be considered by us, we shall usually refer to bank deposits subject to check simply as "bank deposits." They are also called "circulating credit."

It is to be observed that not the checks themselves are the ultimate currency; but the bank deposits or credit balances on the books of the banks against which the checks are drawn. As has been noted, these deposits subject to check are not actually money, since they are not *generally* acceptable; they always require the special consent of the payee. But they are *circulating media* because such is their chief purpose and use.

It is in connection with the transfer of bank deposits that there arises the so-called "mystery of banking." Many persons have imagined that circulating credit is a special form of wealth which may be created by the bank — out of whole cloth, as it were. Others have maintained that credit has no foundation in actual wealth at all, but is a kind of unreal and inflated bubble with a precarious, if not wholly illegitimate, existence. As a matter of fact, bank deposits are as easy to understand as bank-notes, and what is said, in this chapter, of bank deposits may in substance be taken as true also of bank-notes. The chief difference is a formal one, the notes circulating freely from hand to hand, while the deposit currency circulates only by means of specially indorsed orders called "checks."

To understand the real nature of bank deposits, let us imagine a hypothetical institution — a kind of primitive bank existing mainly for the sake of deposits and the safe-keeping of actual money. The original bank of Amsterdam was somewhat like the bank we are now imagining. In such a bank a number of people deposit $100,000 in gold, each accepting a receipt for the amount of his deposit. If this bank should draw up a "capital account" or statement, it would show $100,000 in its vaults and $100,000 owed to depositers, as follows: —

Assets		Liabilities	
Gold	$100,000	Due depositors . .	$100,000

The right-hand side of the statement is, of course, made up of smaller amounts owed to individual depositers. Assuming that there is owed to A $10,000, to B $10,000, and to all others $80,000, we may write the bank statement as follows: —

ASSETS		LIABILITIES	
Gold	$100,000	Due depositor A .	$ 10,000
		Due depositor B .	10,000
		Due other depositors	80,000
	$100,000		$100,000

Now assume that A wishes to pay B $1000. A could go to the bank with B, present certificates or checks for $1000, obtain the gold, and hand it over to B, who might then redeposit it in the same bank, merely handing it back through the cashier's window and taking a new certificate in his own name. Instead, however, of both A and B visiting the bank and handling the money, A might simply give B a check for $1000. B would then send the check to the bank and the bank would simply reduce A's credit on its books by $1000 and increase B's by the same amount. The transfer in either case would mean that A's holding in the bank was reduced from $10,000 to $9000, and that B's was increased from $10,000 to $11,000. The statement would then read: —

ASSETS		LIABILITIES	
Gold	$100,000	Due depositor A .	$ 9,000
		Due depositor B .	11,000
		Due other depositors	80,000
	$100,000		$100,000

Thus the certificates, or checks, would circulate in place of money among the various depositors in the bank. *What really changes ownership, or "circulates," in such cases is the "deposits,"* i.e., *the right to draw money.* The check is merely a certain evidence of this right and of the transfer of this right from one person to another. The man who receives the check uses it as evidence of a right to draw at the bank against the account of the man who drew the check.

In the case under consideration, the bank would be conducted at a loss. It would be giving the time and labour of its clerical force for the accommodation of its depositors, without getting anything in return. But such a hypothetical bank would soon find — much as did the bank of Amsterdam — that it *could* make profits by lending at interest some of the gold on deposit. This could not offend the depositors, for they do not expect or desire to get back the identical gold they deposited. What they want is simply to be able at any time to obtain the same *amount* of gold. Since, then, their arrangement with the bank calls for the payment not of any particular gold, but merely of a definite amount, and that but occasionally, the bank finds itself free to lend out part of the gold that otherwise would lie idle in its vaults. To keep it idle would be a great and needless waste of opportunity.

Let us suppose, then, that the bank decides to loan out half the money which it has in its vaults.

In this country such loaning is usually done in exchange for "promissory notes" of the borrowers. Now the *loan* is really an *exchange* of the money for the promissory note. Let us suppose that the borrowers actually draw out $50,000 of gold. The bank thereby exchanges this money for promissory notes, and its books will read: —

ASSETS		LIABILITIES	
Gold	$ 50,000	Due depositor A	$ 9,000
Promissory notes	50,000	Due depositor B	11,000
		Due other depositors	80,000
	$100,000		$100,000

It will be noted that now the gold in the bank is only $50,000, while the total deposits are still $100,000. In other words, the depositors now have more "money on deposit" than the bank has in its vaults! But, as will be shown, this form of expression involves a popular fallacy, in the misuse of the word "money." *Something* of equivalent value *is* behind each loan, but not necessarily money.

Next, suppose the *borrowers* become, in a sense, lenders also, by redepositing the $50,000 of money which they borrowed, *in return for the right to draw out the same sum on demand*, preferring to use the same in making payments by check rather than by money. In other words, suppose that after borrowing $50,000 from the bank they lend it back to the bank. The bank's assets will thus be enlarged by $50,000 and its obligations (or credit extended) will be equally enlarged; and the balance-sheet will become: —

Assets		Liabilities	
Gold	$100,000	Due depositor A .	$ 9,000
Promissory notes	50,000	Due depositor B .	11,000
		Due other depositors	80,000
		Due new depositors, *i.e.*, the borrowers	50,000
	$150,000		$150,000

In this case gold was borrowed in exchange for a promissory note and then handed back in exchange for a right to draw. Thus the gold really did not budge; but the bank received a promissory note and the depositor a right to draw. Evidently, therefore, the same result would have followed if each borrower had merely handed in his promissory note and received in exchange a right to draw. As this operation is most frequently puzzling to the uninitiated, we repeat the tables representing the conditions before and after these "loans," *i.e.*, these exchanges of promissory notes for rights to draw.

BEFORE THE LOANS

Assets		Liabilities	
Gold	$100,000	Due depositors . .	$100,000

AFTER THE LOANS

Assets		Liabilities	
Gold	$100,000	Due depositors . .	$150,000
Promissory notes	50,000		

Clearly, therefore, the intermediation of the money in this case is needless complication, though it may help to a theoretical understanding of the

resultant shifting of rights and liabilities. Thus the bank may receive deposits of gold or deposits of promises to pay. In exchange for these promises it may give, or lend, either a right to draw or gold. Even when the borrower has "deposited" only a promise to pay money, by fiction he is still held to have deposited money; and, like the original depositor of actual money, he is given the right to make out checks to draw out money. The total value of rights to draw, in whichever way arising, is termed "deposits." Banks more often lend rights to draw than actual money, partly because of the greater convenience to borrowers and partly because the banks wish to keep their actual money on hand, or "cash reserves," large, in order to meet large and unexpected demands. It is true that if a bank loans money, part of the money so loaned will be redeposited by the persons to whom the borrowers pay it in the course of business; but it will not necessarily be redeposited in the same bank. Hence the average banker prefers that the borrower should not withdraw actual money.

Besides lending deposit rights, banks may also lend their own notes, called "bank-notes." And the principle governing bank-notes is the same as the principle governing deposit rights. The holder simply gets a pocketful of bank-notes instead of a credit on his bank account. The bank must always be ready to pay, on demand, either the note holders — *i.e.*, to "redeem its notes" — or the depositors, and in

either case the bank exchanges a promise for a promise. In the case of the note, the bank has exchanged its bank-note for a customer's promissory note. The bank-note carries no interest, is payable on demand, and is issued by an institution well known and trusted. The customer's note bears interest, is usually payable at a definite date, and issued simply by an individual.

Assuming that the bank issues $50,000 of bank-notes, the balance-sheet will now become: —

Assets		Liabilities	
Gold	$100,000	Due depositors . .	$150,000
Loans (promissory notes) . . .	100,000	Due bank-note holders	50,000
	$200,000		$200,000

§ 2. The Basis of Circulating Credit

We repeat that by means of credit the deposits and notes of a bank may *exceed its cash*. There would be nothing mysterious or obscure about this fact if people could be induced not to think of banking operations as money operations. To so represent them is metaphorical and misleading. They are no more money operations than they are real-estate transactions. A bank depositor, A, has not ordinarily "deposited money"; and whether he has or not, he certainly cannot properly say that he "has money in the bank." What he does have is the bank's promise to pay money on demand. The bank owes him money. When a private person

owes money, the creditor never thinks of saying that he has it on deposit in the debtor's pocket.

The same principles of property which apply to bank deposits also apply to bank-notes. There is wealth somewhere behind the mutual promises, though in different degrees of accessibility. The note holder's promise (his promissory note) is secured by his assets; and the bank's promise (the bank-note) is secured by the bank's assets. The note holder has "swapped" less-known credit for better-known credit.

If this fact is borne in mind, the reader will be able to conquer the doubt which may already have arisen in his mind — the doubt as to the legitimacy of the bank's procedure in "lending some of its depositor's money." It cannot be too strongly emphasized that, in any balance-sheet, the value of the liabilities rests on that of the assets. The deposits of a bank are no exceptions. We must not be misled by the fact that the *cash* assets may be less than the deposits. When the uninitiated first learn that the number of dollars which note holders and depositors have the right to draw out of a bank exceeds the number of dollars in the bank, they are apt to jump to the conclusion that there is nothing behind the notes or deposit liabilities. Yet behind these obligations there is always, in the case of a solvent bank, full value — if not actual dollars, at any rate, *dollars' worth of property*. By no jugglery can the liabilities exceed the assets except in

insolvency, and even in that case only nominally, for it still holds that the true value of the liabilities will be only what can be paid on them — perhaps only 25 cents on the dollar. This *true* value of the liabilities will rest upon and be equal to the *true* value of the assets behind them by means of which they will be paid, so far as may be. Debts which cannot or will not be paid in full are often called "bad debts"; and the value of "bad debts" is not their face value, but their actual value to the creditor.

These assets, as already indicated, are, and ought to be, largely the notes of merchants, although so far as the principles here discussed are concerned, they might be any property whatever. If they consisted in the ownership of real estate or wealth unencumbered, so that the tangible wealth which property always represents were clearly evident, all mystery would disappear. But the effect would not be different. Instead of taking grain, machines, or steel ingots on deposit, in exchange for the sums lent, banks prefer to take interest-bearing notes of corporations and individuals who own, directly or indirectly, grain, machines, and steel ingots; and by the banking laws the banks are even *compelled* to take the notes instead of the ingots. The bank finds itself with liabilities which exceed its *cash* assets; but this excess of liabilities is balanced by the possession of other assets than cash. These other assets of the bank are the liabilities of business men. These liabilities are in turn supported by the assets

of the business men. If we continue to follow up the chain of liabilities and assets, we shall find the ultimate basis of the bank's liabilities in the concrete tangible wealth of the world.

This ultimate basis of the entire credit structure is kept out of sight, but the basis exists. Indeed, we may say that banking, in a sense, causes this concrete, tangible wealth to circulate. Even though the acres of a landowner or the iron stoves of a stove dealer cannot circulate in literally the same way that gold dollars circulate, yet the landowner or stove dealer may give to the bank a note on which the banker may base bank-notes or deposits; and these bank-notes and deposits will circulate like gold dollars. Through banking, he who possesses wealth difficult to exchange can create a circulating medium based upon that wealth. He has only to give his note, for which, of course, his property is liable, get in return the right to draw, and lo! his comparatively unexchangeable wealth becomes liquid currency. To put it crudely, deposit banking is a device for coining into dollars, land, stoves, and other wealth not otherwise generally exchangeable.

We began by regarding a bank as substantially a coöperative enterprise, operated for the convenience and at the expense of its depositors. But as soon as the bank reaches the point of lending money to X, Y, and Z on time, while itself owing money on demand, it assumes toward X, Y, and Z risks which the depositors would be unwilling to assume. To

meet this situation, the responsibility and expense of running the bank are taken by a third class of people — stockholders — who are willing to assume the risk for the sake of the chance of profit. Stockholders, in order to guarantee the depositors against loss, put in some cash of their own. The object is to make good any loss to depositors, while reserving the right to keep the profits earned by loaning at interest. Let us suppose that the stockholders put in $50,000, viz. $40,000 in gold and $10,000 in the purchase of a bank building. The accounts now stand: —

Assets		Liabilities	
Gold	$140,000	Due depositors . .	$150,000
Loans	100,000	Due note holders .	50,000
Building . . .	10,000	Due stockholders .	50,000
	$250,000		$250,000

The accounts as they now stand include the chief features of an ordinary modern bank — a so-called "bank of deposit, issue, and discount."

§ 3. Banking Limitations

We have seen that there are assets to meet the liabilities. We now should note that the *form* of the assets must be such as will insure meeting the liabilities promptly. Since the business of a bank is to furnish easily exchangeable property (cash or credit) in place of the "slower" property of its depositors, it fails of its purpose when it is caught with insufficient cash, by which is meant money.

Yet it makes profits partly by tying up its quick property, *i.e.*, lending it out in quarters where it is less accessible. Its problem in policy is to tie up enough to increase its earning, but not to tie up so much as to get tied up itself. So far as anything has yet been said to the contrary, a bank might increase indefinitely its loans in relation to its cash or in relation to its capital. If this were so, deposit currency could be indefinitely inflated.

There are, however, limits to such expansion of loans imposed by prudence and sound economic policy. Insolvency and insufficiency of cash must both be avoided. Insolvency is that condition which threatens when liabilities are extended with insufficient capital. Insufficiency of cash is that condition which threatens when liabilities are extended unduly relatively to cash. Insolvency is reached when the assets no longer cover the liabilities (to others than stockholders), so that the bank is unable to pay its debts. Insufficiency of cash is reached when, although the bank's total assets may be fully equal to its liabilities, the actual cash on hand is insufficient to meet the needs of the instant, and the bank is unable to pay its debts *on demand*.

The risk of insolvency is the greater, the less the ratio of the stockholders' interest to all liabilities to others. The risk of insufficiency of cash is the greater, the less the ratio of the cash to the demand liabilities. In other words, the leading safeguard

against insolvency lies in a large capital and surplus, but the leading safeguard against insufficiency of cash lies in a large cash reserve. Insolvency proper may befall any business enterprise. Insufficiency of cash relates especially to banks in their function of redeeming notes and deposits.

Let us illustrate insufficiency of cash. In our bank's accounts as we left them there appeared cash to the extent of $140,000 and $200,000 of demand liabilities (deposits and notes). The managers of the bank may think this fund of $140,000 unnecessarily large or the loans unnecessarily small. They may then increase their loans (extended to customers partly in the form of cash and partly in the form of deposit accounts) until the cash held by the bank is reduced, say to $40,000, and the liabilities due depositors and note holders increased to $300,000. If, under these circumstances, some depositor or note holder demands $50,000 cash, immediate payment will be impossible. It is true that the assets still equal the liabilities. There is full value behind the $50,000 demanded; but the understanding was that depositors and note holders should be paid in *money on demand*. Were this not a stipulation of the deposit contract, the bank might pay the claims thus made upon it by transferring to its creditors the promissory notes due it from its debtors; or it might ask the customers to wait until it could turn these securities into cash.

Since a bank cannot follow either of these plans,

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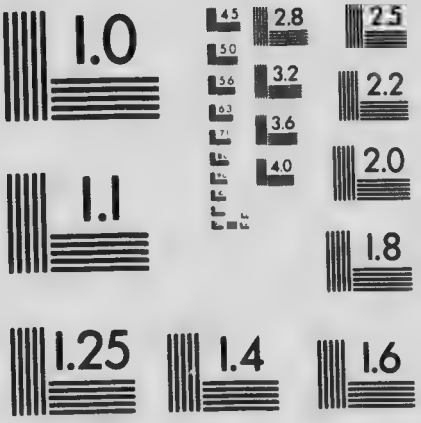

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it tries, where insufficiency of cash impends, to forestall this condition by "calling in" some of its loans, or if none can be called in, by selling some of its securities or other property for cash. But it happens, unfortunately, that there is a limit to the amount of cash which a bank can suddenly realize. No bank could escape failure if a large percentage of its note holders and depositors should *simultaneously* demand cash payment. The paradox of a run on a bank is well expressed by the case of the man who inquired of his bank whether it had cash available for paying the amount of his deposit, saying, "If you can give me the money, I don't want it; but if you can't, I do." Such was the situation in 1907 in Wall Street. All the depositors at one time wanted to be sure their money "was there." Yet it never *is* there all at one time.

Since, then, insufficiency of cash is so troublesome a condition — so difficult to escape when it has arrived, and so difficult to forestall when it begins to approach — a bank must so regulate its loans and note issues as to keep on hand a sufficient cash *reserve*, and thus prevent insufficiency of cash from even threatening. It can regulate the reserve in various ways. For instance, it can increase its reserve relatively to its liabilities by "discounting" less freely — by raising the rate of discount and thus discouraging would-be borrowers, by outright refusal to lend or even renew old loans, or by "calling in" loans subject to call. Reversely, it can

decrease its reserve relatively to its liabilities by discounting more freely — by lowering the rate of discount and thus attracting borrowers. The more the loans in proportion to the cash on hand, the greater the profits, but the greater the danger also. In the long run a bank maintains its necessary reserve by means of adjusting the interest rate charged for loans. If it has few loans, and a reserve large enough to support loans of much greater volume, it will endeavour to extend its loans by lowering the rate of interest. If its loans are large, and it fears too great demands on the reserve, it will restrict the loans by a high interest charge. Thus by alternately raising and lowering the rate of interest, a bank keeps its loans within the sum which the reserve can support, but endeavours to keep them (for the sake of profit) as high as the reserve will support.

If the sums owed to individual depositors are large, relatively to the total liabilities, the reserve should be proportionately large, since the action of a small number of depositors can deplete it rapidly. The reserve in a large city of great banking activity needs to be greater in proportion to its demand liabilities than in a small town with infrequent banking transactions. No absolute numerical rule can be given, though arbitrary rules are often imposed by law. Banks in the United States, are required to keep a ratio of reserve to deposits, varying from $12\frac{1}{2}$ per cent to 25 per cent, according as they are state or national banks, and according

to their location. The proposed National Reserve banks, which are to be purely bankers' banks, are to keep a still higher ratio. For the whole country the reserves in banks are about one-fifth of the deposits. These reserves are all in defence of deposits. In defence of bank-notes, which are issued only by national banks, the method of protection is different. True, the same economic principles apply to both bank-notes and deposits, but the law treats them differently. The government itself chooses to undertake to redeem the national bank-notes on demand, imposing on the banks certain obligations to deposit with itself a redemption fund and government bonds. The same principle is to be extended to the new reserve notes.

As previously stated, the cash reserves of banks, though money, are not, properly speaking, money in *circulation*. The reason is that they are not held for the purchase of goods, but the redemption of another kind of currency — deposits. Thus the money in any society is divided into two chief parts: money in circulation and money in banks. In the United States these two are approximately equal, both being about one and a half billion dollars.[1]

[1] In the United States there is a third, though smaller, stock of money, the hoard in the United States Treasury, amounting at present to about a third of a billion of dollars. In other countries the government money is usually almost all deposited in banks.

§ 4. The Total Currency and its Circulation

The study of banking operations, then, discloses two species of bank currency: one, bank-notes, belonging to the category of money; and the other, deposits, belonging outside of that category but constituting an excellent substitute. Referring these to the larger category "goods," we have a threefold classification of goods: first, actual *money;* second, rights to draw money (deposits); and, third, all other *goods*. Among these, then, there are six possible types of exchange: —

(1) Money against money.
(2) Deposits against deposits.
(3) Goods against goods.
(4) Money against deposits.
(5) Money against goods.
(6) Deposits against goods.

For our purpose, only the last two types of exchange are important, for these constitute the *circulation of circulating media*. As regards the other four, the first and third are "money changing" and "barter," respectively. The second and fourth are banking transactions, the second being such operations as the selling of drafts for checks or the mutual cancellation of bank clearings, and the fourth being such operations as the depositing or withdrawal of money, by depositing cash or cashing checks.

The analysis of the balance-sheets has prepared us for the inclusion of bank deposits or circulating

credit in the equation of exchange. We shall still use M to express the quantity of actual money and V to express the velocity of its circulation. Similarly, we shall now use M' to express the total deposits subject to transfer by check, and V' to express the average velocity of their circulation. The total value of purchases in a year is no longer to be measured by MV, but by $MV + M'V'$. The equation of exchange, therefore, becomes: —

$$MV + M'V' = \Sigma pQ = PT.$$

Let us again represent the equation of exchange by means of a mechanical picture. In Figure 4, trade, as before, is represented on the right by the weight of a miscellaneous assortment of goods;

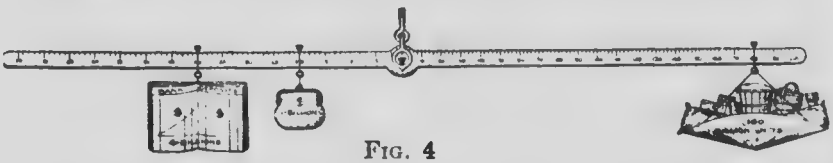

FIG. 4

and their average price by the distance to the right from the fulcrum or the leverage at which this weight hangs. Again, at the left, money (M) is represented by a weight in the form of a purse, and its velocity of circulation (V) by its leverage; but now we have a new weight at the left, in the form of a bank-book, to represent the bank deposits (M'). The velocity of circulation (V') of these bank deposits is represented by its distance from the fulcrum or the leverage at which the book hangs.

This mechanism makes clear the fact that the average price (right leverage) increases with the increase of money or bank deposits and with the velocities of their circulation, and decreases with the increase in the volume of trade.

Recurring to the left side of the equation of exchange, or $MV + M'V'$, we see that in a community without bank deposits the left side of the equation reduces simply to MV, the formula of the preceding chapter, for in such a community the term $M'V'$ vanishes. The introduction of M' tends to raise prices; that is, the hanging of the bank-book on the left requires a lengthening of the leverage at the right.

§ 5. Deposit Currency Normally Proportional to Money

With the extension of the equation of monetary circulation to include deposit circulation, the influence exerted by the quantity of money on general prices becomes less direct; and the process of tracing this influence becomes more difficult and complicated. It has even been argued that this interposition of circulating credit breaks whatever connection there might be between prices and the quantity of money. This would be true if circulating credit were independent of money. But the fact is that the quantity of circulating credit, M', tends to hold a definite relation to M, the quantity of money in circulation; that is, deposits are normally a more or less definite multiple of money.

Two facts normally give deposits a more or less definite ratio to money. The first has been already explained, viz., that bank reserves are kept in a more or less definite ratio to bank deposits. The second is that individuals, firms, and corporations preserve more or less definite ratios between their cash transactions and their check transactions, and also between their money and deposit balances. These ratios are determined by motives of individual convenience and habit. In general, business firms use money for wage payments, and for small miscellaneous transactions included under the term "petty cash"; while for settlements with each other they usually prefer checks. These preferences are so strong that we could not imagine them overriden except temporarily, and to a small degree. A business firm would hardly pay car fares with checks and liquidate its large liabilities with cash. Each person strikes an equilibrium between his use of the two methods of payment and does not greatly disturb it except for short periods of time. He keeps his stock of money or his bank balance in constant adjustment to the payments he makes in money or by check. Whenever his stock of money becomes relatively small and his bank balance relatively large, he cashes a check. In the opposite event, he deposits cash. In this way he is constantly converting one of the two media of exchange into the other. A private individual usually feeds his purse from his bank account; a retail commercial firm

usually feeds its bank account from its till. The bank acts as intermediary for both.

Another reason why money and checks each have separate spheres, tending at any given time to maintain a fairly definite relation to each other, is that cash and checks are, generally speaking, used by different classes. Wage-earners for the most part use only money, while the professional and propertied classes and "fictitious persons" (*i.e.*, corporations, partnerships, etc.) use mostly checks. At present probably over half of the families in the United States use no checks.

For any one individual the adjustment of cash-in-pocket to deposits-in-bank will be extremely rough; for sometimes the one or the other will be much too large or too small. But, in the community as a whole, the adjustment of the cash to deposits used will be very delicate; for the temporary aberrations of many thousands of individuals will ordinarily almost completely neutralize each other.

In a given community the quantitative relation of deposit currency to money is determined by several considerations of convenience. In the first place, the more highly developed the business of a community, the more prevalent the use of checks. Where business is conducted on a large scale merchants habitually transact their larger operations with each other by means of checks, and their smaller ones by means of cash. Again, the more concentrated the population, the more prevalent the use of checks. In cities

it is more convenient both for the payer and the payee to make large payments by check; whereas in the country, trips to a bank are too expensive in time and effort to be convenient, and therefore more money is used in proportion to the amount of business done.

There is, then, a relation of convenience and custom between checks and cash circulation, and a more or less stable ratio between the usual deposit balance of the average man or corporation and the usual fund of money kept in pocket or till. This fact, as applied to the country as a whole, means that by convenience a fairly definite ratio is fixed between M and M'. If that ratio is disturbed temporarily, there will come into play a tendency to restore it. Individuals will deposit surplus cash or they will cash surplus deposits.

Hence, both money in circulation (as shown above) and money in reserve (as shown previously) tend to keep in a fixed ratio to deposits. It follows that the two must be in a more or less definite, though elastic, ratio to each other.

§ 6. Summary

The contents of this chapter may be formulated in a few simple propositions.

(1) Banks supply two kinds of currency, viz., bank-notes — which are money; and bank deposits (rights to draw) — which are not money.

(2) A bank check is merely presumptive evidence of a right to draw.

(3) Behind the claims of depositors and note holders stand, not simply the cash reserve, but all the assets of the bank.

(4) Deposit banking is a device by which wealth, incapable of direct circulation, may be made the basis of the circulation of rights to draw.

(5) The basis of such circulating rights to draw or deposits must consist in part of actual money, and it *should* consist in part also of quick assets readily exchangeable for money.

(6) Six sorts of exchange exist among the three classes of goods, money, deposits, and other goods. Of these six sorts of exchange, the most important for our present purposes are the exchanges of money and deposits against other goods.

(7) The equation of exchange, extended so as to make it include bank deposits, reads thus: —

$$MV + M'V' = \Sigma\, pQ = PT.$$

(8) Bank deposits (M') tend to keep a normal ratio to bank reserves and to the quantity of money (M); because, in the first place, cash reserves are necessary to support bank deposits, and these must bear some more or less constant ratio to the amount of such deposits; and because, in the second place, business convenience dictates that the circulating medium or currency shall be apportioned between deposits and money in a certain more or less definite, even though elastic, ratio.

CHAPTER V

TRANSITION PERIODS — CRISES AND DEPRESSIONS

§ 1. Rising Prices

We are now ready to study temporary or transitional changes in the magnitudes in the equation of exchange. Let us begin by assuming a slight initial disturbance, such as that produced, for instance, by an increase in the quantity of money. This, through the equation of exchange, will cause a rise in prices. As prices rise, profits of business men measured in money will rise also. This will be true even if the costs of business rise in the same proportion. Thus, if a man, who formerly sold goods for $10,000 which cost $6000, clearing $4000, could now get double prices at double cost, his profit would double also, being $20,000 − $12,000, or $8000. Of course, such a rise of profits would be purely nominal, as it would merely keep pace with the rise in price level. The business man would gain no advantage; for his large money profits now would buy no more than his small money profits bought before.

But, as a matter of fact, the business man's profits will usually rise much more than this, because many of his expenses will tend to remain the same. In particular his payments to his creditors for in-

terest on past loans, to his landlord for rent, and to his employees for salaries and wages will for a time remain unaffected or little affected by the general rise in prices. Consequently, he will find himself making greater profits than usual, and be encouraged to expand his business by increasing his borrowings. These borrowings are mostly in the form of short-time loans from banks; and, as we have seen, such loans engender deposits. Therefore, deposit currency (M') will increase. But this extension of deposit currency tends further to raise the general level of prices, just as the increase of gold raised it in the first place. This further rise of prices enables borrowers who are now receiving greater profits to receive still greater profits. Borrowing, already stimulated, is stimulated still further. More loans are demanded, and, with the resulting expansion of bank loans, deposit currency (M'), already expanded, expands still more. Hence prices rise still further.

This sequence of events may be briefly stated as follows: —

(1) Prices rise (whatever the first cause may be; we have chosen for illustration an increase in the amount of money in circulation).

(2) "Enterprisers" — persons who undertake business enterprises of various kinds — get much higher prices than before, without having much greater expenses (for interest, rent, salaries, etc.), and therefore make much greater profits.

(3) Enterpriser-borrowers, encouraged by large profits, increase their borrowings.

(4) Deposit currency (M') expands relatively to money (M).

(5) Because of this expansion of deposit currency (M') prices continue to rise; that is, phenomenc No. 1 is repeated. Then No. 2 is repeated, and so on.

In other words, a slight initial rise of prices sets in motion a train of events which tends to repeat itself. Rise of prices generates rise of prices and continues to do so as long *as the enterprisers' profits continue abnormally high.*

§ 2. How a Rise of Prices culminates in a Crisis

The expansion in deposit currency indicated in this cumulative movement abnormally increases the ratio of deposits (M') to money (M). This, however, is not the only disturbance caused by the increase in M. There are disturbances to some extent in T, in V, and in V'. In particular, trade (T) will be stimulated by the stimulation of loans. New constructions of buildings, machinery, etc., are entered upon. These effects are always observed during rising prices, and people note approvingly that "business is good" and "times are booming." Such statements represent the point of view of the ordinary business man who is an "enterpriser-borrower." They do not represent the sentiments of the creditor, the salaried man, or the labourer, most of whom are silent but long-suffer-

ing, paying higher prices, but not getting proportionally higher incomes.

Such one-sided expansion cannot proceed forever. It must ultimately spend itself. The unadjusted elements ultimately adjust themselves with a jump. The landlord raises his rent at the first opportunity. The employee demands more pay, often striking to get it. The creditor raises the rate of interest. The whole situation is changed. The banks are forced in self-defence to refuse loans (or at any rate to discourage loans by making harder terms for them) because they cannot permit so abnormal an expansion of loans relatively to reserves. To allow such expansion to continue would mean breaking the law and might mean breaking the bank. Then borrowers can no longer hope to make great profits, and loans cease to expand.

Now an enterprise, which is started by borrowing, is expected to be continued by renewed borrowing. But with loans hard to get, those persons who have counted on renewing their loans on the former terms and for the former amounts are unable to do so. It follows that those of them who cannot contract new debts and, without contracting such new debts, cannot pay old ones, are destined to become insolvent and fail. The failure (or prospect of failure) of firms that have borrowed heavily from banks induces fear on the part of many depositors that the banks will not be able to realize on these loans. Hence the banks themselves may fall under

suspicion and their depositors demand cash. Then occur those "runs on the banks" which deplete the bank reserves at the very moment they are most needed to pay the demands of the depositors. Being short of reserves, the banks have to curtail their loans. Any renewed borrowing becomes difficult or impossible, and even the original loans may be "called" by the banks. Those enterprisers who are caught *must* have money or credit to liquidate their obligations or else become insolvent. Some of them are destined to become bankrupt, and, with their failure, the demand for loans is correspondingly reduced.

This culmination of an upward price movement is what is called a crisis — a condition characterized by failures due to lack of cash when and where it is most needed.

These bankruptcies tend to spread; for when a man cannot pay his creditors, the latter in turn find difficulty in paying theirs. In this way the fall of one firm is communicated successively to many others, as one brick in a row may knock down the whole row.

§ 3. Completion of the Credit Cycle

After the crisis, a reaction sets in. Bank loans tend to be small, and consequently deposits (M') are reduced. The contraction of deposit currency makes prices fall still more. Those who have borrowed for the purpose of buying stocks of goods, now

find they cannot sell them for enough even to pay back what they have borrowed. The sequence of events is now the opposite of what it was before: —

(1) Prices fall.

(2) Enterprisers get much lower prices than before without having much lower expenses (for interest, rent, salaries, etc.), and therefore make much lower profits.

(3) Enterpriser-borrowers, discouraged by small profits, contract their borrowings.

(4) Deposit currency (M') contracts relatively to money (M).

(5) Because of this contraction of deposit currency (M') prices continue to fall; that is, phenomenon No. 1 is repeated. Then No. 2 is repeated, and so on.

Thus a fall of prices generates a further fall of prices. The cycle evidently repeats itself as long as the enterprisers' profits remain abnormally low. The man who loses most is the business man in debt. He is the typical business man, and he now complains that "business is bad." There is a "depression of trade."

The contraction becomes self-limiting as soon as loans are easier to get. Banks are led to make loans easy in order to get rid of their accumulated reserves. After a time, normal conditions begin to return. The weakest producers have been forced out, or have at least been prevented from expanding their business by increased loans. The strongest firms are left to build up a new credit structure.

Borrowers again become willing to take ventures; failures decrease in number; bank loans cease to decrease; prices cease to fall; borrowing and carrying on business becomes profitable; loans are again demanded; prices again begin to rise, and there occurs a repetition of the upward movement already described.

The upward and downward movements taken together constitute a complete credit cycle, which resembles the forward and backward movements of a pendulum.

Many historical examples could be cited. The discovery of gold in California in the middle of the last century was followed by an inflation of the world's currencies, first through the new gold and later through expansion of deposit currency as well. Prices rose rapidly; business men made high profits; times were good until 1857, when a crisis occurred both in the United States and Europe. This was followed by a sharp fall in prices, a depression in trade, a recovery, and another period of inflation culminating in a second crisis in 1866. Again the pendulum swung back only to return again in the crisis of 1873. A more recent example is found in the gold inflation beginning in 1896 in consequence of the enormous gold production in the Transvaal, in Cripple Creek, and in the Klondike. The money in circulation in the United States doubled in eleven years (1896–1907), bank deposits subject to check nearly trebled, and prices rose one-half. "Prosperity" (that is, profitable business from the point

of view of the enterpriser) at first seemed boundless. In 1907 the wave broke in the crisis of that year, followed by a contraction of deposits and a fall of prices in the next year with a gradual recovery in the years immediately following. Then the cycle began again and we have just apparently passed the crest again, although nothing acute enough to be called a severe crisis has occurred. The jolt to credit in 1913 was much milder than in 1907, and we are apparently soon to enter on another period of expansion.

We have considered the rise, culmination, fall, nd recovery of prices. In most cases the time occupied by the swing of the commercial pendulum to and fro is about ten years. While the pendulum is continually seeking a stable position, practically there is almost always some occurrence to prevent perfect equilibrium. Oscillations are set up which, though tending to be self-corrective, are continually perpetuated by fresh disturbances. The oscillations are like those of a ship in a rough sea. While in a calm sea a ship will "pitch" only a few times before coming to rest, in a high sea the pitching never ceases; though continually seeking equilibrium, the ship continually encounters causes which accentuate the oscillations.

§ 4. The Safeguard of High Interest

The foregoing sketch of prices gives, of course, only the elementary features of price cycles. In any

actual case numerous special factors enter. It would divert us too far from the main purpose of this book to go into further details on this subject. For such details the reader is referred to Prof. Wesley C. Mitchell's great monograph, "Business Cycles." [1]

Before leaving this subject, however, I shall take the opportunity to enlarge a little on what has been said about the rate of interest; for this plays a central rôle in credit cycles and one which is not generally appreciated. Most people want the rate of interest always to be low and when in crises it is high they blame the banks for raising it. But the truth is that the banks are usually to blame for not raising it early enough to prevent the crisis.

The rate of interest tends to be and ought to be high when the prices are rising; and, reversely, tends to be and ought to be low while prices are falling. Suppose, for instance, that prices are rising at the rate of 1 per cent per annum. Then $100 lent to-day is equivalent in purchasing power, not to $100 repayable next year, but to $101 repayable next year. Thus the lender, when he gets back his principal of only $100, does not get back as much purchasing power as he lent, and the borrower does not pay back as much purchasing power as he borrowed. In other words, the fact that prices have risen during the year has made things easier for the borrower and harder for the lender. During the

[1] Berkeley (University of California Press), 1913.

Civil War, after the United States government had inflated the currency with "greenbacks," the first result was a rise of prices, and the next result was that men who had mortgaged their farms in the West found it easy to pay back their loans. As they said, the mortgages on their farms "disappeared like smoke." Five thousand dollars paid back in 1864 for $5000 loaned in 1860 really represented only half as much purchasing power over goods; for prices had doubled. That is, the inflation of the currency freed the borrowers from half their debts. We see, then, that when prices are rising, the principal of a debt becomes less and less valuable. If prices are rising 1 per cent per annum, that is, if the principal of the debt, in terms of goods, is *falling* about 1 per cent, then the interest on the debt ought to be increased about 1 per cent in order that there should be the same burden on the borrower as there would have been if prices had not risen. If the prices are rising 2 per cent per annum, 2 per cent would have to be added to the rate of interest in order to compensate for the rise; and so on for other rates of rise in prices. On the other hand, if prices are falling, the rate of interest ought to be reduced in order to offset the appreciation of the principal.

This ideal compensation in the interest rate might occur if man's foresight were perfect, and as a matter of fact an approximation at such adjustment does actually occur. A statistical study of the periods

of rising and falling prices in the United States, England, Germany, France, China, Japan, and India shows that, in general, when prices are rising, the rate of interest is high, and when prices are falling it is low. Although partially adjusted during transition period, it is not sufficiently adjusted. The essential fact remains that during falling prices the burden of debts grows greater, and during rising prices, less. Were the rate of interest properly and promptly adjusted, crises would be fewer and they would be less severe.

How, then, can we get a better adjustment of the rate of interest? One way is to prevent these changes in price levels as much as possible — to "standardize" the dollar. This may be a long time in happening. A second way is for business men to become more alive to the future and more quick to predict what is going to happen to prices. Education in this line will go on and is going on through the trade journals.

A third way is through the removal of the existing prejudice against raising the rate of interest. We still inherit the old idea that interest is "usury" or robbery. If we could once get rid of the prejudice against allowing the rate of interest to rise high as well as to fall low, that is, could regard the rate of interest as properly subject to fluctuation and as being a market price changing day by day, like any other price, a long step would be taken toward preventing crises.

A fourth way is to make credit more elastic. This is to be accomplished by the new currency act. Hitherto in the United States, the banks after allowing loans at too low a rate and so expanding them unduly, have suddenly ceased loaning when, as at a crisis, the legal limit of reserves was reached. Instead of this sudden rigid limit to loans the new act will place an elastic limit; for the banker can secure loanable funds by "rediscounting" some of his loans with the federal reserve bank. In this way he can always extend accommodation to customers, although at higher rates. A sound business man has the right to expect his bank to give him necessary loans at all times, provided he can and will meet the terms which the market requires. Hitherto he could never be sure at certain times of securing loans on any terms at all. The new provisions should greatly reduce the danger and severity of crises.

CHAPTER VI

REMOTE INFLUENCES ON PRICES

§ 1. Influence which Conditions of Production and Consumption Exert on Trade and therefore on Prices

Thus far we have considered the level of prices as affected by the volume of trade, by the velocity of circulation of money and deposits, and by the quantity of money and of deposits. These are the only influences which can *directly* affect the level of prices. Any other influences on prices must act through these five. There are myriads of such influences (outside of the equation of exchange) that affect prices through the medium of these five. At the close of the last chapter we noted the effect during transition periods of a change or the lack of change in the rate of interest. It is our purpose in this chapter to note some of the outside influences which at all times affect the factors of the equation of exchange.

We shall first consider the outside influences that affect the volume of trade and, through it, the price level. The most important may be classified as follows: —

1. *Conditions affecting producers.*
   (*a*) Geographical differences in natural resources.
   (*b*) The division of labour.
   (*c*) Knowledge of the technique of production.
   (*d*) The accumulation of capital.
2. *Conditions affecting consumers.*
   (*a*) The extent and variety of human wants.
3. *Conditions connecting producers and consumers.*
   (*a*) Facilities for transportation.
   (*b*) Relative freedom of trade.
   (*c*) Character of monetary and banking systems.
   (*d*) Business confidence.

That many of these conditions promote trade is so obvious and well known as to require no explanation. The fact that some parts of the earth produce wheat, others spices, others furs, evidently tends to cause trade to flow between these parts, while the fact that some groups of persons devote themselves to farming, others to cloth making, others to building, etc., evidently implies trade between these groups. It is clear also that the state of knowledge of the means and methods of production will stimulate trade. For instance, mines of Africa and Australia were left unworked for centuries by ignorant natives, but were opened by white men possessing a knowledge of metallurgy. Again, it is clear that knowledge to be of use must be applied; and that its application usually requires the aid of capital. The greater and the

more productive the stock of capital in any community, the more goods it can put into currents of trade. A mill will make a town a centre of trade. Docks, elevators, warehouses, and railway terminals help to transform a harbour into a port of commerce.

Since increase in trade tends to decrease the general level of prices, it is obvious that anything which tends to increase trade likewise tends to decrease the general level of prices. We conclude, therefore, that among the various causes which tend to decrease prices are greater geographical or personal specialization, improved productive technique, and the accumulation of capital.

Almost equally obvious is the relation of the extent and variety of human wants to the volume of trade. Wants are, as it were, the mainsprings of economic activity and, in the last analysis, keep the economic world in motion. The desire to have clothes as fine as the clothes of others, or finer, or different, leads to the multiplicity of silks, satins, laces, etc., and the same principle applies to furniture, amusements, books, works of art, and every other means of gratification.

The increase of wants in so far as it leads to an increase in trade tends to lower the price level.

The next group of influences mentioned in our list are those influences which conditions connecting producers and consumers exert on trade and therefore on prices.

As Macaulay said, with the exception of the alphabet and the printing-press, no set of inventions has tended to alter civilization so much as those which abridge distance—such as the railway, the steamship, the telephone, the telegraph, and that conveyer of information and advertisements, the newspaper. These all tend, therefore, to decrease prices.

But trade barriers are not only physical, but legal. A tariff between countries has the same influence in decreasing trade as a chain of mountains. The freer the trade, the more of it there will be. In France many communities have a local tariff (*octroi*) which tends to interfere with local trade. In the United States trade is free within the country itself, but between the United States and other countries there is a tariff wall. The very fact of increasing facilities for transportation by lowering or removing physical barriers, has stimulated nations and communities to erect *legal* barriers in their place. Tariffs not only tend to decrease the frequency of exchanges, but to the extent that they prevent international or interlocal division of labour and make countries more alike as well as less productive, they also tend to decrease the amounts of goods which can be exchanged. The ultimate effect is thus to raise prices. This is the effect on the general level of prices. Besides this general effect are the particular effects on those articles on which duties are laid, but with these particular effects we have here nothing to do.

Another sort of restriction on trade is the "restraint of trade" of monopolies or combinations. These, of course, like any other reduction in the amounts of goods sold, tend to raise the general level of prices.

The development of efficient monetary and banking systems tends, among other effects, to increase trade. There have been times in the history of the world when money was in so uncertain a state that people hesitated to make many trade contracts because of the lack of knowledge of what would be required of them when the contract should be fulfilled. In the same way, when people cannot depend on the good faith or stability of banks, they will hesitate to embark in extensive trading.

Confidence not only in banks in particular, but in business dealings in general, is truly said to be "the soul of trade." In South America there are many places waiting to be developed simply because capitalists do not feel any security in contracts there. They are fearful that by hook or by crook the fruit of any development they may undertake will be taken from them.

We see, then, that prices will tend to fall through an increase in trade, which may in turn be brought about by improved transportation, by increased freedom of trade, by improved monetary and banking systems, and by business confidence.

§ 2. Influence of Individual Habits on Velocities of Circulation and therefore on Prices

Having examined those causes outside the equation which affect the volume of trade, our next task is to consider those outside causes which affect the velocities of circulation of money and of deposits. For the most part, the causes affecting one of these velocities affect the other also. These causes may be classified as follows: —

1. *Habits of the individual.*
   (*a*) As to hoarding.
   (*b*) As to book credit and loans.
   (*c*) As to the use of checks.
2. *Systems of payments in the community.*
   (*a*) As to frequency of receipts and of disbursements.
   (*b*) As to regularity of receipts and of disbursements.
   (*c*) As to correspondence between receipts and disbursements.
3. *General causes.*
   (*a*) Density of population.
   (*b*) Rapidity of transportation.

Taking these up in order, we may first consider what influence hoarding has on the velocity of circulation. Velocity of circulation of money is the same thing as its rate of turnover. It is to be found by dividing the total payments effected by money

in a year by the average amount of money in circulation in that year. It is an average of the rates of turnover of the individuals who compose society. This velocity of circulation or rapidity of turnover of money is the greater for each individual, the more money he expends with a given average amount of cash on hand, or the less average cash he keeps for a given yearly expenditure. One man keeps an average of $10 in his pocket and expends $500 a year; he therefore turns over the average contents of his pocket fifty times a year. Another, while expending the same sum ($500), keeps the more prudent average of $20; he, therefore, turns over his stock of cash only twenty-five times a year.

Some people are, by habit, always impecunious or short of ready money and tend to have a high rate of turnover; others carry a full purse and have a slow rate of turnover. When, as used to be the custom in France, people put money away in stockings and kept it there for months, the circulation must have been extremely slow. The same principle applies to deposits.

Hoarded money is sometimes said to be withdrawn from circulation, but this is only another way of saying that hoarding tends to decrease the velocity of circulation. The only real distinction between "hoarding" money in a stocking or safe and "carrying" money in a purse is one of degree. The money remains in the stocking or safe longer than in the purse. In either case it may be said to be in cir-

culation, but when "hoarded," it circulates much more slowly. The discontinuance of hoarding evidently tends to increase the price level by increasing the velocity of circulating money. This must be the tendency in future generations when the great buried hoards of the Orient are put into active circulation. This will surely happen ultimately when Occidental habits shall have been generally adopted.

The habit of "charging," *i.e.*, using book credit, tends to *increase* the velocity of circulation of money, because the man who gets things "charged" does not need to *keep on hand* as much money as he would if he made all payments in cash. A man who daily pays *cash* needs to keep cash for daily contingencies. The system of *cash* payments, unlike the system of book credit, requires that money shall be kept on hand in *advance* of purchases. Evidently if money must be provided in advance, it must be provided in larger quantities than when merely required to liquidate past debts. In the system of cash payments a man must keep money idle in advance, lest he be caught in the embarrassing position of lacking it when he most needs it. With book credit he knows that even if he should be caught without a penny in his pocket, he can still get supplies on credit. These he can pay for when money comes to hand. As soon as this money is received there is a use awaiting it to pay debts accumulated. For instance, a labourer receiving and spending $7 a week,

if he cannot "charge," must make his week's wages last through the week. If he spends $1 a day, his weekly cycle must show on hand on successive days at least $7, $6, $5, $4, $3, $2, and $1, at which time another $7 comes in. This makes the average balance $4. The rate of turnover (ratio of expenditure to cash carried) would then be $7 divided by 4, or about twice a week. But if he can charge everything, and then wait until pay-day to meet the resulting obligations, he need keep nothing through the week, paying out his $7 when it comes in. His weekly cycle need show no higher balances than $7, $0, $0, $0, $0, $0, $0, averaging only $1; the turnover would then be $7 divided by 1 or seven times a week.

Analogous to the use of book credit is the use of loans of any kind. In a highly organized center of trade, like the New York stock or produce exchanges, credit is extended to an extreme degree in order to facilitate the transactions of a large volume of business without the necessity of keeping on hand a large cash balance of money or deposits subject to check. Credit is extended by loans, by allowing purchases on small payments called "margins," and in other ways. All these extensions of loan credits tend to increase the velocity of circulation of money and deposits.

Through book credit and loans, therefore, the average amount of money or bank deposits which each person must keep on hand to meet a given ex-

penditure is made less. This means that the rate of turnover is increased; for if people spend the same amounts as before, but keep smaller amounts on hand, the quotient of the amount spent divided by the amount on hand must increase.

The habit of using checks rather than money will also affect the velocity of circulation of money, because a depositor's surplus money instead of being hoarded will probably be put in the bank in return for a right to draw by check.

Banks thus offer an outlet for any surplus pocket money or surplus till money, and tend to prevent the existence of idle hoards. On the other hand, surplus deposits may be converted into cash — that is, exchanged for cash — as desired. The net result is that those who make use of both cash and deposits have the opportunity, by adjusting the two, to prevent either from being idle.

We see, then, that these three habits — the habit of carrying small supplies of cash instead of "hoarding," the habit of charging, and the habit of using checks — all tend to raise the level of prices through their effects on the velocity of circulation of money, or of deposits.

We come next to the influence of systems of payments on velocities of circulation and therefore on prices.

The more frequently money or checks are received and disbursed, the shorter is the average interval between the receipt and the expenditure

of money or checks, and the more rapid is the velocity of circulation.

This may best be seen from an example. A change from monthly to weekly wage payments tends to increase the velocity of circulation of money. If a labourer is paid weekly $7, and reduces this evenly each day, ending each week empty-handed, his average cash, as we have seen, would be little over half of $7, or about $4. This makes his turnover nearly twice a week. Under monthly payments, the labourer who receives and spends an average of $1 a day will have to spread the $30, more or less evenly, over the following thirty days. If, at the next pay-day, he comes out empty-handed, his average money during the month has been about $15. This makes his turnover about twice a month. Thus the rate of turnover is more rapid under weekly than under monthly payments, provided, of course, the introduction of weekly payments does not disturb some other factor influencing velocity. If it leads to cash payments in place of book credit, the rate of turnover may really decrease instead of increasing.

Again, when the workman can be fairly certain of both his receipts and expenditures, he can, by close calculation, adjust them so precisely as safely to end each payment cycle with an empty pocket. This habit is extremely common among certain classes of city labourers. On the other hand, if the receipts and expenditures are irregular, either in

amount or in time, prudence requires the worker to keep a larger sum on hand to insure against mishaps. Even when foreknown with certainty, irregular receipts require a larger average sum to be kept on hand. We may, therefore, conclude that regularity, both of receipts and of payments, tends to increase velocity of circulation.

We next consider the correspondence between receipts and disbursements, *i.e.*, making the payments come at nearly the same times as the times when the receipts are obtained. It is manifestly a great convenience to the spender of money, or of deposits, if dealers to whom he is in debt will allow him to postpone payment until he has received his money or his check. This arrangement obviates the necessity of keeping much money or deposits on hand, and therefore increases their velocity of circulation. Where the payments which a man is to make for rent, interest, insurance, and taxes occur at periods irrespective of the times when he receives money, it will be necessary for him to accumulate money on deposits in advance, thus increasing the average on hand, withdrawing money from use for a time, and decreasing the velocity of circulation.

We conclude, then, that correspondence and regularity of payments, no less than frequency of payments, tend to increase prices by increasing velocity of circulation.

We come now to the influences of general causes on velocities of circulation and therefore on prices.

The more densely populated a locality, the more rapid will be the velocity of circulation because there will be readier access to people from whom money is received or to whom it is paid. Although there are no statistics on this subject, the velocity of circulation must be slower in the country than in the city. A lady who has a city house and a country house states that in the country she keeps money in her purse "for weeks," whereas in the city she keeps it but a "few days." Pierre des Essars has worked out the velocity of circulation of bank deposits in many European cities. Examination of his figures reveals the fact that, in almost all cases, the larger the town in which the bank is situated, the more active the deposits. The Bank of Greece has a turnover whose rate of rapidity is only four times a year, while that of the Bank of France is over one hundred times a year.

Again, the more extensive and the speedier the transportation in general, the more rapid the circulation of money. Anything which makes it easier to pass money from one person to another will tend to increase the velocity of circulation. Railways have this effect. The telegraph has increased the velocity of circulation of deposits, since these can now be transferred thousands of miles in a few minutes. Mail and express, by facilitating the transmission of bank deposits and money, have likewise tended to increase their velocity of circulation.

We conclude, then, that density of population and rapidity of communication tend to increase prices by increasing velocities of circulation.

§ 3. Influences on the Volume of Deposit Currency and therefore on Prices

We have to consider lastly the specific outside influences on the volume of deposits subject to check.

These are chiefly: —

(1) The system of banking and the habits of the people in utilizing that system.

(2) The habit of charging.

It goes without saying that a banking system must be devised and developed before deposits can affect prices or even exist. The invention of banking has undoubtedly led to a great increase in deposits and a consequent rise of prices. This has been true in spite of the fact that the development of efficient monetary and banking systems tends to increase the volume of trade and to that extent to lower the price level. Here, as in many other instances, the effects of improving monetary and banking facilities are complex, affecting more than one factor in the equation of exchange. The price-raising effect is far more important than the price-depressing effect. In the future one of the chief causes tending to raise prices will doubtless be the expansion of deposits subject to check.

We have already seen that "charging" increases

the velocity of circulation of money. It is also a means of increasing the volume of deposits subject to check; that is, "charging" is often a preliminary to payment by check rather than by cash — if a customer did not have his obligations "charged," he would pay by money and not by check. The ultimate effect of the practice of charging, therefore, is to increase the ratio of check payments to cash payments and the ratio of deposits to money carried (M' to M) and therefore to increase the amount of credit currency which a given quantity of money can sustain.

This effect, the substitution of checks for cash payments, is probably by far the most important effect of "charging," and exerts a powerful influence toward raising prices.

Anything which tends to increase bank deposits tends to that extent to raise prices. Thus the creation of "trusts" has resulted in the issue of a great mass of stocks and bonds which are more readily accepted by bankers as "collateral" for loans than the stocks and bonds of the smaller and less-known companies from which the "trusts" are formed. The consequence is: more bank loans, greater deposits, and a higher level of prices. Besides these and the other effects of "trusts," which have been mentioned elsewhere, on the general level of prices, there are more obvious and direct effects on the particular prices of the goods dealt in by the "trusts." But we have here nothing to do with

particular prices. We may observe, however, that when trusts raise particular prices it does not follow that thereby they raise the general level of prices. Unless they disturb the five factors, M, M', V, V', or T, they cannot effect the general level of prices; for in that case, the general level of prices, as the equation or exchange shows, could not be disturbed either, and the raising of prices of particular trust-made articles would have to result indirectly in lowering the prices of some other goods enough to compensate.

CHAPTER VII

REMOTE INFLUENCES ON PRICES (*Continued*)

§ 1. Influence of the "Balance of Trade" on the Quantity of Money and therefore on Prices

WE have now considered those influences outside the equation of exchange which affect the volume of trade (T), the velocity of circulation of money and deposits (V' and V''), and the amount of deposits (M'). We have left the outside influences which affect the quantity of money (M).

The chief of these may be classified as follows: —

(1) Influences operating through the exportation and importation of money.

(2) Influences operating through the melting and minting of money.

(3) Influences operating through the production and consumption of money metals.

(4) Influences of monetary and banking systems.

The first to be considered is the influence of foreign trade on the quantity of money in a country and therefore on its price level. Hitherto we have confined our studies of price levels to an isolated community, having no trade relations with other communities. In the modern world, however, no

such community exists, and it is important to observe that international trade gives present-day problems of money and of price level an international character.

If all countries had their own irredeemable paper money and no money that was acceptable elsewhere, price levels in different countries would have no intimate connection. Indeed, the connection is actually slight as between countries which have different metallic standards; for example, between a gold-basis and a silver-basis country. But where two or more nations trading with each other use the *same* standard, there is a tendency for the price level of each to influence profoundly the price level of the other.

The price level in a small country like Switzerland depends largely upon the price levels in other countries; for if the price levels in these countries is higher or lower than in Switzerland, the difference will set up trade currents which will increase or decrease the quantity of money in Switzerland and therefore raise or lower its level of prices to correspond to the levels outside. Gold, which is the primary or full-weight money in most civilized nations, is in this way constantly sent from one country or community to another. When a single small country is under consideration, while it is quite correct to say that the quantity of money in that country determines the price level, we must not fail to note that the quantity of money within

its borders is in turn dependent upon the level of prices outside. An individual country bears the same relation to the world that a lagoon bears to the ocean. The level of the lagoon depends, of course, upon the quantity of water in it. But the quantity of water in it depends upon the level of the ocean. As the tide in the outside ocean rises and falls, the quantity of water in the lagoon will adjust itself accordingly.

To simplify the problem of the distribution of money among different communities, we shall, for the time being, ignore the fact that money consists ordinarily of material capable of monetary uses. We shall therefore omit consideration of the disappearance of money through melting; likewise, for the present, we shall omit consideration of the production of money through minting.

Let us, then, consider the causes that determine the quantity of money in a state like Connecticut. If the level of prices in Connecticut temporarily falls below that of the surrounding states, Rhode Island, Massachusetts, and New York, the effect is to cause an export of money from these states to Connecticut, because people will buy goods wherever they are cheapest and sell them wherever they are dearest. With its low prices, Connecticut becomes a good place to buy from, and a poor place to sell in. But if outsiders buy of Connecticut, they will have to bring money to buy with. There will, therefore, be a tendency for money to flow to Con-

necticut until the level of prices there rises to a level which will arrest the influx. If, on the other hand, prices in Connecticut are higher than in surrounding states, it becomes a good place to sell in and a poor one to buy from. But if outsiders sell in Connecticut, they will receive money in exchange. There is, then, a tendency for money to flow out of Connecticut until the level of prices in Connecticut is lower. In general, money flows away from places where the level of prices is high, and toward places where it is low. Men sell goods where they can get most money, and buy goods where they will have to give the least money. We say "money," for in the long run we do not need to consider the interflow of bank deposits; as we have seen, in the long run deposit currency in each country will maintain a definite ratio to money. In the long run an increase or decrease of money in a country will increase or decrease its deposits.

But it must not be inferred that the prices of various articles or even the general level of prices will become precisely the same in different countries. Distance, ignorance as to where the best markets are to be found, tariffs, and costs of transportation help to maintain price differences. The native products of each region tend to be cheaper in that region. They are exported as long as the excess of prices abroad is enough to more than cover the cost of transportation. Ordinarily a *commodity will not be exported at a price which will not at least be*

equal to the price in the country of origin plus the freight. Many commodities are shipped only one way. Thus, wheat is shipped from the United States to England, but not from England to the United States. It tends to be cheaper in the United States. Large exportations raise its price in America toward the price in England, but the American price will usually remain below the English price by the cost of transportation. A few commodities may be sent in either direction, according to market conditions.

But although international or interlocal trade will never bring about exact uniformity of price levels, it will, to the extent that it exists, produce an adjustment of these levels *toward* uniformity by regulating, in the manner already described, the distribution of money. If one commodity enters, to any considerable extent, into international trade, it alone will suffice, though slowly, to act as a regulator of money distribution; for, in return for that commodity, money may flow, and, as the price level rises or falls, the quantity of that commodity sold is correspondingly adjusted. In ordinary intercourse between nations, even when a deliberate attempt is made to interfere with it by protective tariffs, there will always be a large number of commodities thus acting as outlets and inlets.

And since the *quantity of money itself* affects prices for *all* sorts of commodities, the regulative effect of international trade applies, not simply to the com-

modities which enter into that trade, but to all others as well. It follows that nowadays international or interlocal trade is constantly regulating price levels throughout the world.

We must not leave this subject without emphasizing the effects of a tariff on the purchasing power of money. When a country adopts a duty on imports, the tendency is for the level of prices in that country to rise. A tariff obviously raises the prices of the "protected" goods. But the tariff does more than that — it tends also to raise the prices of *un*-protected goods. Thus, a new tariff first causes a decrease in imports but no change in exports. The foreigner will, for a time, continue to buy from the protected country almost as much as before. This unchecked buying of goods means unchecked export of goods, while the imports have suddenly been checked. There will result, therefore, a temporary excess of the protected country's exports over its imports or a so-called "favourable" balance of trade, that is, a net inflow of money. This inflow will eventually raise the prices, not alone of protected goods, but of unprotected goods as well. The rise will continue till it reaches a point high enough to put a stop to the "favourable" balance of trade, — that is, until the raised prices check the purchase by foreigners of the export goods.

Although the "favourable balance" of trade created by a tariff is temporary, it leaves behind a permanent increase of money and of prices. This

is perhaps the chief reason why a protective tariff seems, to many, a cause of prosperity. It furnishes a temporary stimulus not only to protected industries, but to trade in general, which is, in reality, simply the stimulus of money inflation. The permanent effect is to keep prices in general, including money wages, at a higher level in the protected country than in free-trade countries. This is doubtless one reason why American wages and prices are higher than English.

The reduction of the tariff by the Underwood act should tend to lower prices by stimulating imports and causing an outflow of gold.

Among the many fallacies connected with "the balance of trade," is the idea that unless the trade between any *two* countries balances, one of them must be losing to the other. But it is only necessary that the trade between any one country and all the rest of the world should balance. For instance, trade is often triangular or indirect. The United States may send a surplus of exports to Canada, Canada send a surplus of exports to Germany, while Germany sends a surplus of exports to the United States.

Another common oversight in dealing with the "balance of trade" is the failure to take into account invisible items of trade, such as freights, insurance, banking commissions, tourists, travelling expenses, and last, but not least, payments for investment securities. The export of securities are very important items

in international trade. Even the interest coupons on past indebtedness form, in the case of many countries, including the United States, very large items.

Finally, though all these invisible items be accurately measured, there would still be a slight difference between exports and imports, owing to the fact that there is not always a *quid pro quo*, but that some international trade represents gifts. This is particularly true in the case of the United States in which many of the immigrants send remittances to their relatives in "the old country."

§ 2. Influence of Melting and Minting on the Quantity of Money and therefore on Prices

We have seen how M in the equation of exchange is affected by the importation or exportation of money. Considered with reference to the M in any one of the countries concerned, the M's in all the others are "outside influences."

Proceeding now one step farther, we must consider those influences on M that are not only outside of the equation of exchange for any particular country, but also outside that for the whole world. Besides the monetary inflow and outflow through importation and exportation there is an inflow and outflow through minting and melting. In other words, not only do the stocks of money in the world connect with each other like interconnecting bodies of water, but they connect in the same way with the outside *stock of bullion*. In the modern world

one of the precious metals, such as gold, usually plays the part of primary money, and this metal has two uses — a monetary use and a commodity use. That is to say, gold is not only a money material, but a commodity as well. In their character of commodities, the precious metals are raw materials for jewelry, works of art, and other products into which they may be wrought. It is in this unmanufactured or raw state that they are called bullion.

Gold money may be changed into gold bullion, and *vice versa*. In fact, both changes are going on constantly, for if the value of gold, as compared with other commodities, is greater in the one use than in the other, gold will immediately flow toward whichever use is more profitable, and the market price of gold bullion, in terms of gold money, will determine the direction of the flow. Since 100 ounces of gold $\frac{9}{10}$ fine can be transformed into 1860 gold dollars, the market value of so much gold bullion, $\frac{9}{10}$ fine, must tend to be $1860. If it costs nothing to have bullion coined into money, and nothing to melt money into bullion, there will be an automatic flux and reflux from money to bullion and from bullion to money that will prevent the price of bullion from varying greatly. If the price of gold bullion is greater than the money which could be minted from it, for instance, if 100 ounces of gold sell for $1861, the users of gold who require bullion — notably jewelers — will save the $1 difference by melting $1860 of gold coin into 100 ounces of bullion. Con-

trariwise, if the price of bullion is less than the value of gold coin, say $1859, the owners of bullion will save the $1 difference by taking 100 ounces of bullion to the mint and having it coined into 1860 gold dollars. The effect of melting coin, on the one hand, is to decrease the amount of gold money and increase the amount of gold bullion, thereby lowering the value of gold as bullion and raising the value of gold as money; and thereby also lowering the price level and restoring the equality between bullion and money. The effect of minting bullion into coin is, by the opposite process, to bring the value of gold as coin and the value of gold as bullion into equilibrium.

When a charge called "seigniorage" is made for changing bullion into coin, or where the process involves expense or delay, the flow of bullion into currency will be to that extent impeded. But under a modern system of free coinage and with modern methods of reducing coin to bullion, both melting and minting may be performed so inexpensively and so quickly that there is practically no cost or delay involved. In fact, there are few instances of more exact price adjustment than the adjustment between gold bullion and gold coin. It follows that the quantity of money and, therefore, its purchasing power, is directly dependent on that of gold bullion.

This stability of the price of gold bullion expressed in gold coin causes confusion in the minds of people, giving them the erroneous impression

that there is no change in the value of money. Indeed, this stability has often been cited to show that gold is a stable standard of value. Dealers in objects made of gold seem to misunderstand the significance of the fact that an ounce of gold ($\frac{9}{10}$ fine) always costs $18.60 in the United States, or an ounce of gold ($\frac{11}{12}$ fine) always costs £3: 17*s.* 10½*d.* in England. This means nothing more than the fact that gold in one form and measured in one way will always bear a constant ratio to gold in another form and measured in another way. An ounce of gold bullion is worth a fixed number of gold dollars for the same reason that a pound sterling of gold is worth a fixed number of gold dollars, or that a ton of large steel ingots is worth a fixed number of pounds of small steel ingots.

Except, then, for extremely slight and temporary fluctuations, gold bullion and gold money must always have the same value. Therefore, in the following discussion respecting the more considerable fluctuations affecting both, we shall speak of these values interchangeably as "the value of gold."

§ 3. Influence of the Production and Consumption of Money Metals on the Quantity of Money and therefore on Prices

The stock of bullion is not the ultimate outside influence on the quantity of money. As the stock of bullion and the stock of money influence each other, so the total stock of both is itself influenced

by production and consumption. The production of gold consists in the output of the mines, which constantly tends to add to the existing stocks both of bullion and coin. The consumption of gold consists in the use of bullion in the arts by being wrought into jewelery, gilding, etc., and in losses of coin by abrasion, shipwreck, etc. If we consider the amount of gold coin and bullion as a sort of reservoir, production would be the inflow from the mines, and consumption the outflow to the arts and by destruction and loss. To the inflow from the mines should be added the *re*-inflow from forms of art into which gold had previously been wrought, but which have since become obsolete. This is illustrated by the business of producing gold bullion by burning gold picture-frames.

We shall consider, first, the inflow or production, and afterward the outflow or consumption. The regulator of the inflow (which practically means the production of gold from the mines) is its estimated cost of production. Wherever the estimated cost of producing a dollar of gold is less than the existing value of a dollar in gold, the gold will (normally) be produced. Wherever the cost of production exceeds the existing value of a dollar, the gold will (normally) not be produced. In the former case the production of gold is profitable; in the latter it is unprofitable.

This holds true in whatever way cost of production is measured, whether in terms of gold itself, or

in terms of some other commodity such as wheat, or of commodities in general. In gold-standard countries the gold-miner does actually reckon the cost of producing gold in terms of gold. From his standpoint it is a needless complication to translate the cost of production and the value of the product into some other standard than gold. He is interested in the relation between the two, and this relation will be the same whichever standard is employed. To illustrate how the producer of gold measures everything in terms of gold, suppose that the price level rises. He will then have to pay more dollars for wages, machinery, fuel, etc., while the prices obtained for his *product* (expressed in those same dollars) will, as always, remain unchanged. Conversely, a fall in the price level will lower his cost of production (measured in dollars), while the price of his product will still, as always, remain the same. Thus we have a *variable* number expressing the cost of production and a *constant* number expressing the price of gold product.

If we express the same phenomena, not in terms of gold, but in terms of wheat, or rather, let us say, in terms of goods in general, we shall have the opposite conditions. Then a fall in the price level cannot be said to affect his cost of production (measured in goods), while the "price," or purchasing power, of his product over goods will rise. A *constant* number expresses the cost of gold and a *variable* number, its price (purchasing power).

Thus the comparison between price and cost of production is the same, whether we use gold or other commodities as our criterion. In the one view — *i.e.*, when prices of labour and commodities are measured in gold — a rise of these prices appears as a rise in the gold-miner's cost of production — the money cost to him of labour and materials — while the price of his product, gold, appears constant; in the other view — *i.e.*, when labour and commodities are measured in other goods — the same phenomenon is expressed as a fall in the purchasing power of his product, gold, while the cost of labour and materials in terms of themselves is the constant quantity. In the one view his costs rise relatively to his product; in the other his product falls relatively to his costs. In either view he will be discouraged. He will look at his troubles in the former light, *i.e.*, as a rise in the cost of production; but we shall find it more useful to look at them in the latter, *i.e.*, as a fall in the purchasing power of the product. In either case the comparison is between the cost of the production of gold and the purchasing power of gold. If this purchasing power is above the cost of production in any particular mine, it will pay to work that mine. If the purchasing power of gold is lower than the cost of production in any particular mine, it will not pay to work that mine.

So much for the inflow of gold and the conditions regulating it. We turn next to outflow or consump-

tion of gold. This has two forms, viz.: consumption in the arts and consumption for monetary purposes.

First, we shall consider its consumption in the arts. If objects made of gold are cheap, — that is, if the prices of other objects are relatively high, — then the relative cheapness of the gold objects will lead to increase in their use and consumption. Expressing the matter in terms of money prices, when prices of everything else are higher and people's incomes are likewise higher, while gold-leaf and gold ornaments remain at their old prices, people will use and consume more gold-leaf and ornaments.

These are instances of the consumption of gold in the form of commodities. The consumption and loss of gold as coin is a matter of "abrasion" (gradual waste by wearing or rubbing against other coins or the hands, pocket, or purse), of loss by shipwreck and other accidents. They change with the changes in the amount of gold in use and in its rapidity of exchange.

A fall, therefore, in purchasing power of the value of gold affects both consumption and production. It stimulates consumption (that is, the turning of bullion into articles of commerce); and it discourages production. An increase of purchasing power, of course, acts in the opposite way. Conversely, consumption and production affect purchasing power. Consumption, or the withdrawal of bullion into commerce, raises the purchasing power of

what is left, while production from the mines lowers the purchasing power.

The purchasing power of money, being thus played upon by opposing forces of production and consumption, is driven up or down as the case may be.

We have now discussed all but one of the important outside influences upon the equation of exchange. That one is the character of the monetary and banking system which affects the quantity of money and deposits. This we reserve for special discussion in the following chapter.

Meanwhile, we may note that almost all of the influences which at the present time actually affect either the quantity or the velocities of circulation have been and are predominantly in the direction of higher prices. Almost the only opposing influence is the increased volume of trade. We may also point out that some of those influences discussed in this and the preceding chapter operate *in more than one way*. Consider, for instance, technical knowledge and invention, which affect the equation of exchange by increasing trade. So far as these increase trade, the tendency is to decrease prices; but so far as they develop metallurgy and the other arts which increase the production and transportation of the precious metals, they tend to *increase* prices. So far as they make the transportation and circulation of money and deposits quicker, they also ad to

increase prices. So far as they lead to the development of the art of banking, they likewise tend to increase prices both by increasing deposit currency (M') and by increasing the velocity of circulation of both money and deposits. So far as they lead to the concentration of population in cities, they tend to increase prices by accelerating circulation.

CHAPTER VIII

OPERATION OF MONETARY SYSTEMS

§ 1. Gresham's Law

THUS far we have considered the influences which determine the purchasing power of money when the money in circulation is all of one kind. We have now to consider the monetary systems in which two or more kinds of money are used.

One of the first difficulties in the early history of money was that of keeping two or more metals in circulation at the same time. The monetary unit in one of the two would become cheaper than in the other, and the cheaper would drive out the dearer.

To this tendency has been given the name of "Gresham's Law" in honour (rather undeservedly) of Sir Thomas Gresham, a financial adviser of Queen Elizabeth. He called attention to the tendency in the middle of the sixteenth century, although it is now known that many others had anticipated him. In fact, the Law seems to have been recognized among the ancient Greeks. It is mentioned in the "Frogs" of Aristophanes: —

"For your old and standard pieces, valued and approved and tried,
Here among the Grecian nations and in all the world beside,

Recognized in every realm for trusty stamp and pure
essay,
Are rejected and abandoned for the trash of yester-
day;
For a vile, adulterate issue, drossy, counterfeit, and
base
Which the traffic of the city passes current in their
place!"

Gresham's Law is ordinarily stated in the form, "bad money drives out good money," for it has usually been observed that the badly worn, defaced, light-weight, "clipped," "sweated," and otherwise deteriorated money tends to drive out full-weight, freshly minted coins. This formulation, however, is not accurate. "Bad" coins, *e.g.*, worn, bent, defaced, or even "clipped" coins, will drive out other money only so far as they are less valuable. Sometimes bright freshly minted coins drive out old, dull, defaced coins, as, for instance, when new gold drove out silver from the United States after 1837, the new gold dollar being cheaper than the old silver dollar. Accurately stated, the Law is simply: *The cheaper money tends to drive out the dearer.*

A good example of Gresham's Law as applied to gold and silver is found in the history of Japan. When the treaty of 1858 between Great Britain and Japan was adopted, an ounce of gold was worth in Japan only $4\frac{1}{2}$ ounces of silver, whereas in Europe it was worth $15\frac{1}{2}$ ounces, or $3\frac{1}{2}$ times as much. The result was that the first merchants who entered

Japan from Europe could make a large profit by trading in gold and silver. By taking, say, $4\frac{1}{2}$ ounces of silver to Japan they could buy an ounce of gold, and taking this ounce of gold back to Europe they could obtain $15\frac{1}{2}$ ounces of silver for it, or more than three times as much as they started with. So silver flowed into Japan and gold flowed out.

The reason why the cheaper of two moneys always prevails is that the choice of the use of money rests chiefly with the man who gives it in exchange, not with the man who receives it. When any one has the choice of paying his debts in either of two moneys, motives of economy will evidently prompt him to use the cheaper. If the initiative and choice lay principally with the person who receives instead of the person who pays the money, the opposite would hold true. The dearer or "good" money would then drive out the cheaper or "bad" money. It is because the payer of money exercises the choice that the cheaper money tends to be passed on and the dearer money to be withdrawn.

Any individual into whose hands the two moneys may chance to fall may exercise this choice and withdraw the newly minted coins. But there are two classes especially interested and most instrumental in withdrawing the "good" money from circulation; namely, those who wish it either for export or for melting, — the bankers and the goldsmiths.

What, then, becomes of the dearer money? It may

be hoarded or go into the melting-pot or go abroad — hoarded and melted from motives of economy, and sent abroad because, where foreign trade is involved, it is the foreigner receiving the money, rather than ourselves giving it, who dictates what kind of money shall be accepted. He will take only the best, because our legal tender laws do not bind him.

Until "milling" [1] the edges of coins was invented, and a "limit of tolerance" [2] of the mint was adopted, much embarrassment was felt in commerce from the fact that the "clipping" and debasing of coins was a common practice. Nowadays, however, any coin which has been so "sweated" or "clipped" as to reduce its weight appreciably ceases to be legal tender, and being commonly rejected by those to whom it is offered, ceases to be money. Within the customary or legal limits of tolerance, however, — that is, as long as the cheaper money continues to be money, — it will tend to drive out the dearer.

§ 2. Bimetallism

The obvious effect of Gresham's Law is to decrease the purchasing power of money at every opportunity. The history of the world's currencies is largely a record of money debasements, often at

[1] Making the edges finely corrugated so that they cannot be filed or otherwise rubbed off without detection.

[2] The allowable deviation from the statutory weight. If the deviation exceeds this, the coin is rendered unacceptable in law as legal tender.

the behest of the sovereign. Our chief purpose now, in considering Gresham's Law, is to formulate more fully the causes determining the purchasing power of money under monetary systems subject to the operation of Gresham's Law. One application is to "bimetallism." Under bimetallism, governments open their mints to the free coinage of two metals (usually gold and silver) at a fixed coinage ratio, and make both sorts of coin unlimited legal tender at that ratio.[1] Under this system the debtor has the option, unless otherwise bound by contract, of making the payment either in gold or silver money. These, in fact, are the two requisites of complete bimetallism, viz.: —

(1) The free and unlimited coinage of both metals at a fixed ratio.

(2) The unlimited legal tender of each metal at that ratio.

The object of bimetallism is to render the purchasing power of money more stable. It has been denied that bimetallism ever did or can make gold and silver dollars circulate side by side at equal values. This denial is based on Gresham's Law, by which the cheaper metal will drive out the dearer. Our first task is to show, quite irrespective of its

[1] By the "coinage ratio" is meant the ratio of the weight of the silver dollar to that of the gold dollar. This is at present 16 to 1; for a silver dollar weighs 412½ grains, which is almost exactly sixteen times the weight of a gold dollar of 25.8 grains.

desirability, that bimetallism can "work" and has worked under certain circumstances, but not under others.

Suppose that, at first, gold alone is freely coined (and is unlimited legal tender) and then (as proposed in the United States by the "free silver" party in 1896 and 1900) silver is put on exactly the same basis, the mints being opened to its free coinage also.

The results of thus opening the mints to silver at a ratio of 16 to 1 with gold will be different, according to the relative *market* value of gold and silver before the mints are opened. If 412½ grains of silver were *dearer* than 25.8 grains of gold, there would be no silver coined at all, for no one will take 412½ grains of silver to be coined and used as a dollar of money when he can get more than a gold dollar for it by selling it as silver bullion.

But if (as happens to be the case to-day) 412½ grains of silver are cheaper than 25.8 grains of gold, every owner of silver bullion will make a profit by taking it to the mint. In this way he can get a silver dollar for every 412½ grains of silver bullion, while in the silver bullion market he can get only, let us say, fifty cents. The result will be a wild scramble among all owners of silver bullion to get it coined, in order to transform each 412½ grains of it into a full-fledged dollar instead of fifty cents, which previously was all they could get for it. It is true that the new silver dollar may not be worth as much in purchasing power as a gold dollar; but being

legal tender, it will have just as great debt-paying power.

There can be no doubt, then, that silver, being cheaper than gold, will be taken to the mint as soon as the bimetallic law takes effect. The question now is, What will be the result? To this question the answer is briefly as follows: —

I. The first effect (as has been emphasized by "monometallists") will be the operation of Gresham's Law, by which the cheap silver dollars will tend to expel the dear gold dollars from circulation.

II. But (as emphasized by "bimetallists") this very operation of Gresham's Law is self-limiting; for it tends to reduce the original disparity between the values of the gold and silver dollars. Owing to the eagerness of debtors to use silver instead of gold in paying their debts, the value of silver is increased and that of gold decreased. This mutual approach of the values of gold and silver dollars may result in making them equal and if they become equal before gold is entirely expelled from circulation, we shall have both metals in concurrent circulation at par.

III. But (as pointed out by the "monometallists") the next result will be a great stimulus to the minting of silver and a great discouragement to the mining of gold. Consequently, silver will gradually become more plentiful, and therefore cheaper again, and gold scarcer, and therefore dearer again. Consequently, silver will again tend to expel gold.

IV. But (as insisted by "bimetallists") this increase of the stock of silver (coin and bullion) and decrease of the stock of gold are also self-limiting; for the increased production of silver will be checked by increased cost of production, and consumption will tend to overtake production, while the opposite adjustments apply to gold. The result may be the concurrent circulation of both metals or it may be the expulsion of one of them from circulation. All depends on the quantities produced. If one of the metals is produced in superabundance beyond a certain limit, it will completely displace the other. Bimetallism is thus possible only within limits, and there is always a chance, amounting in the long run to a certainty, that the system will break down.

We may now illustrate, by historical examples, the principles just explained. The first and most important case is that of France. The ratio of $15\frac{1}{2}$ to 1 was adopted by France in 1785, and continued by the law of 1803. The history of France and the Latin Union during the period from 1785, and especially from 1803, to 1873 is instructive. It affords a practical illustration of the theory that when conditions are favourable, gold and silver can be kept tied together for a considerable period by means of bimetallism. During this period the public was ordinarily unconscious of any disparity of value, and only observed the changes from the relative predominance of gold to the relative predominance of

silver in the currency and *vice versa*. In the wholesale bullion market, it is true, there were slight variations from the ratio of $15\frac{1}{2}$ to 1. But such variations simply supplied the force to restore equilibrium.

From 1803 until about 1850 the tendency was for silver to displace gold. In this period there was a net export of gold.

By 1850 the process had practically reached its limit. Bimetallism would have broken down and resulted in silver monometallism then and there, except for the fact that, as though to save the day, gold had just been discovered in California. The consequence of the new and increased gold production was a reverse movement, an inflow of gold into the French currency, and an outflow of silver. From 1848 to 1870, inclusive, the net importation of gold amounted to 5,153,000,000 francs, or over 224,000,000 francs a year, while the net exportation of silver from 1852 to 1864, inclusive, amounted to 1,726,000,000 francs, or nearly 133,000,000 francs a year. Gold was displacing silver and filling the currency. It seemed probable that France would be entirely drained of silver currency and come to a gold basis. But the gold mines were gradually exhausted, while silver production increased, with the consequence that there was again a reversal of the movement. Silver gradually pushed gold out of circulation and, had not France and the other countries of the Latin Union successively suspended the free coinage of silver in 1873–1878, they would

have found themselves on a silver, instead of a gold, basis. It has been claimed by bimetallists that this action in demonetizing silver was itself the cause of the breakdown. The truth is, that the breakdown was the cause of demonetization, although demonetization, by keeping back silver from circulation and keeping gold in circulation, did operate to widen the breach already made.

The Latin Union might conceivably have maintained bimetallism longer if other countries had joined with them. But it had to absorb, not only much of the silver provided by the mines, but also a considerable amount which had previously formed part of the monetary stock of Germany, and which, at the adoption of the gold standard by that country following the Franco-Prussian War, was thrown on the market. That is, not only the silver mines, but countries demonetizing silver, dumped silver on the Latin Union. Add to this the movement toward the gold standard in Scandinavia and the United States, and it becomes evident that the obstacles were many, for a union comprising so few, and mostly unimportant states.

§ 3. The "Limping" Standard

Bimetallism is to-day a subject of historical interest only. It is no longer practised; but its former prevalence has left behind it in many countries, including France and the United States, a monetary system which is sometimes called the

"limping" or "one-legged" standard. Such a system comes about when, in a system of bimetallism, before either metal can wholly expel the other, the mint is closed to the cheaper of them, but the coinage that has been accomplished up to date is not recalled. Suppose silver to be the metal thus excluded — as in France and the United States. Any money of that metal already coined and in circulation is kept in circulation at par with gold. This parity may continue, even if *limited* additional amounts of silver be coined from time to time. There will then result a difference in value between bullion and silver coin, the silver coin being overvalued. In short, we thus have a gold standard with silver token money.

In the case just discussed, the value of the coined silver will be equal to the value of gold at the legal ratio. Precisely the same principle applies in the case of any money the value of which as money is greater than the value of its constituent material. Take the case, for instance, of paper money. So long as it has the distinctive character of money — general acceptability at its legal value — and is limited in quantity, its value will ordinarily be equal to that of its legal equivalent in gold. If its quantity increases indefinitely, it will gradually push out the gold until there is no gold left. Likewise, credit money and credit in the form of bank deposits would have this effect. To the extent that they are used, they lessen the need for gold in circulation.

So long as the quantity of silver or other token money, *e.g.*, paper money, is too small to displace gold completely, gold will continue in circulation. The value of other money in this case cannot fall below that of gold. For if it should, it would, by Gresham's Law, displace gold; we are assuming that it is not of sufficient quantity to produce this effect.

The parity between silver coin and gold coin, under this "limping" standard is, therefore, not necessarily dependent on any redeemability in gold, but may result merely from limitation on the amount of silver coin. Such limitation is usually sufficient to maintain parity, despite irredeemability. This is not always true, however; for if for any reason (such as its novelty and strangeness, or rumours of further inflation) the people should not have confidence in some form of irredeemable paper or token money, even though it were not overissued, it would depreciate and be nearly as cheap in money form as it is in the raw state. It might even be so completely rejected that it would cease to circulate and cease to be money. A man is willing to accept money at its face value so long as he has confidence that every one else is ready to do the same. But it is possible, for instance, for a *mere fear* of overissue to destroy this confidence. The payee, who under ordinary circumstances submits patiently to whatever money is a customary or legal tender, may then take a hand and insist on "contracting out" of the

offending standard. That is, he may insist on making all his future contracts in terms of the better metal — gold, for instance — and thus contribute to the further downfall in value of the depreciated paper, or he may resort to barter or even cease to engage in commercial contracts altogether.

Irredeemable paper money, then, like our irredeemable silver dollars, may circulate at par with other money if limited in quantity and not too unpopular. If it is gradually increased in amount, such irredeemable money may expel all metallic money and be left in undisputed possession of the field.

Jevons said: "There is plenty of evidence to prove that an inconvertible paper money, if carefully limited in quantity, can retain its full value. Such was the case with the Bank of England notes for several years after the suspension of specie payments in 1797, and such is the case with the present [1875] notes of the Bank of France." But Jevons observes that all irredeemable paper money started as redeemable. He adds that habit may do much to keep money in circulation *when it is once started*, "but it is doubtful whether the most powerful government could oblige its subjects to accept and circulate as money a worthless substance which they had no other motive for receiving."

Irredeemable money has always had a fascination for many people. But it has never proved desirable. It is a constant temptation toward abuse, causes business distrust, discourages long-time contracts,

and has almost invariably proved a veritable curse to the country employing it. While, therefore, redeemability is not absolutely essential to produce parity of value with the primary money, it is practically a wise precaution.

The lack of redeemability of silver dollars in the United States is one of the chief defects in our unsatisfactory monetary system Our paper silver certificates are redeemable in silver dollars, but these silver dollars are not redeemable in gold. The absurdity of the situation consists in the fiction that somehow the redemption of the silver certificates in silver dollars keeps them both at par with gold. The truth is that the paper would keep its parity with gold just as well if there were no redemption in silver. A silver dollar as silver is worth less than a gold dollar just as truly as a paper dollar as paper is worth less than a gold dollar. The fact that the silver is worth half a dollar, while the paper is worth only a fraction of a cent, will not avail in the least to make either the silver or the paper worth a whole dollar. A pillar reaching halfway to the ceiling cannot hold the ceiling up any more than a pillar an inch high. The silver certificates and dollars keep at par with gold merely because they are not sufficient in quantity to displace gold. If their quantity should ever be made great enough, they would displace gold and depreciate; and the redeemability of one of them in the other could not avail to prevent such depreciation.

Very much the same thing is true of the United States notes or "greenbacks." These are only nominally redeemable; for as soon as redeemed they must be reissued. The essence and virtue of redemption is retirement, and without retirement redemption is a mockery. The requirement that the greenback must never be retired permits no contraction. The result is that when contraction becomes necessary, it occurs by the export of gold. In 1893, when a forced expansion of silver certificates and "treasury notes" was in progress, the greenbacks acted, as President Cleveland said, as an "endless chain." Their redemption drew gold out of the treasury for export, and their reissue led to a repetition of this operation until enough gold overflowed to make room for the new silver certificates and treasury notes. The process was only ended by repealing the law requiring silver inflation.

CHAPTER IX

CONCLUDING DISCUSSION OF PRINCIPLES

§ 1. Can "Other Things Remain Equal"?

THE chief purpose of the preceding eight chapters is to set forth the causes determining the purchasing power of money. This purchasing power has been studied as the effect of five and only five causes. These fall naturally into three groups. These three groups are (1) circulating media, (2) their velocity, and (3) the volume of trade for which they are circulated. These and their effect, *i.e.*, the price level, are, we saw, connected by an equation of exchange, $MV + M'V' = PT$. The three causes, in turn, we found to be themselves effects of antecedent causes lying entirely outside of the equation of exchange. To be specific, we saw that (1) the volume of trade will be increased, and therefore the price level correspondingly decreased, by the differentiation of human wants, by diversification of industry, and by facilitation of communication; (2) the velocities of circulation will be increased, and therefore the price level increased, by improvident habits, diminution of hoarding by the use of book credit, and by rapid transportation; (3) the quantity of money will be increased, and therefore the price level increased,

by the import and minting of money, and, antecedently, by the mining of the money metal, by the introduction of another and initially cheaper money metal through bimetallism, and by the issue of bank-notes and other paper money; (4) the quantity of deposits will be increased, and therefore the price level increased, by extension of the banking system and by the use of book credit. The reverse causes produce, of course, reverse effects.

Thus, behind the three sets of causes which alone affect the purchasing power of money, we find over a dozen antecedent causes. If we chose to pursue the inquiry to still remoter stages, the number of causes would be found to increase at each stage in much the same way as the number of one's ancestors increases with each generation into the past. In the last analysis myriads of factors play upon the purchasing power of money; but it would be neither feasible nor profitable to catalogue them. The value of our analysis consists rather in simplifying the problem by setting forth clearly the three proximate causes through which all others whatsoever must operate. At the close of our study, as at the beginning, stands forth the equation of exchange as the great determinant of the purchasing power of money. With its aid we see that normally the quantity of deposit currency varies directly with the quantity of money, and that therefore the introduction of deposits does not disturb the relations found to hold true before. That is, it is still true that (1)

prices vary directly as the quantity of money, provided the volume of trade and the velocities of circulation remain unchanged; (2) that prices vary directly as the velocities of circulation of money and deposits (if these two velocities vary together), provided the quantity of money (and therefore according to our assumption, deposits) and the volume of trade remain unchanged; and (3) that prices vary inversely as the volume of trade, provided the quantity of money (and therefore deposits) as well as the velocities of circulation remain unchanged.

But the question now arises — can the factors supposed to "remain unchanged" in these three cases actually remain unchanged? To this question the answer is, "Yes, with one exception." A change in the volume of trade per capita probably affects, besides prices, the velocities of circulation, so that these velocities cannot "remain unchanged." At a given price level, the greater the per capita trade, the more rapid is the individual turnover.

Practical evidence and illustration of this is found by examining the cash accounts of 113 Yale students, who kept each for one month a careful record of the average cash in the pocket and the daily expenditures. It was found that those who expended less than $600 a year kept, on the average, in the pocket $8.60, and spent at the rate of $367 per annum, thus having a turnover of $\frac{367}{8.60}$ or 43 times a year, while those who expended over $600 a

year carried an average cash balance of $12.70, and spent at the rate of $1175 a year, making a turnover of $\frac{1175}{12.70}$ or 93 times a year. This shows that the latter class averages three times as great an expenditure as the former, but carried only 50 per cent more cash in the pocket, and, in consequence, had a velocity of circulation of money more than twice as great. In fact, classifying the students more minutely into five groups, namely: (1) those expending less than $300 a year; (2) those over $300 and under $600; (3) those over $600 and under $900; (4) those over $900 and under $1200; (5) those over $1200, we find that the velocities of circulation were, respectively, 17, 59, 61, 96, 137. These figures certainly suggest, if they do not prove, that for a given price level, the greater the expenditure, the higher the rate of turnover. In other words, the turnover varies with the volume of trade of the individual. If this conclusion is sound, then the larger the per capita trade of a community, the more rapid the turnover of money, and presumably of deposits, which is simply what we should expect on general principles; for it merely means that the larger the scale of any business operation, the greater the economy of the use of cash. Small stores have to keep a larger stock of cash relatively to their business than large stores, just as small banks need a larger reserve in proportion to business transacted.

From this conclusion the surprising result follows: that though an increase of the world's volume of

trade tends directly to reduce the general level of prices, nevertheless, if that increase is greater than the increase in the population so that there is an actual *per capita* increase in the volume of trade, then this exerts, as an indirect effect, a counter tendency to raise prices by increasing the velocity of circulation of money and credit. The meagre statistics of the students referred to may, it is true, not be typical; but taking them as we find them, they indicate that a trebling in the per capita trade causes a doubling in the velocities of circulation of money and credit. This strongly suggests the conclusion that any effect on the price level from an increase in the volume of trade, so far as it is an increase *per capita*, is more than half counteracted by the indirect effect on the velocities of circulation.

But, with this exception and apart from transition periods, the three groups of magnitudes which determine the price level — (1) money and deposits, (2) their velocities, (3) volume of trade — are practically independent of each other. That is to say, a change in the quantity of money (and therefore of deposits), though it may temporarily affect velocities and trade, will not do so in the long run. Instead, it will exert all its effects on prices, which will therefore change in the same proportions. Similarly, a change in velocities, though it may temporarily affect money and deposits as well as trade, will not do so in the long run, but will also exert all its effects on prices.

These conclusions rest on the fact that careful study and investigation fail to show any other relations among the factors in the equation of exchange than those which have been mentioned.

§ 2. An Increase of Money does not Decrease its Velocity

As no one denies the truth of the equation of exchange, any one who could disprove the quantity theory of money (in the sense maintained in this book) must do so by showing that an increase in the quantity of money, instead of tending to increase the level of prices, tends rather to affect one or more of the other four elements in the equation of exchange, viz., either (1) to decrease the velocity of circulation of money, or (2) to decrease the deposits subject to check, or (3) to decrease their velocity, or (4) to increase the volume of trade. None of these propositions has any evidence in its support.

It cannot be shown, for instance, that (except during transition periods) there is any tendency for an increase in the quantity of money to decrease its velocity of circulation. Some persons who have never investigated the subject imagine that if money were suddenly doubled in quantity, prices need not rise but that the public would, for some unaccountable reason, carry double the former quantity of money while expending precisely the same amounts; in other words, that the velocity of circulation of money would decrease. But this would be incon-

venient and we have seen that the velocity of circulation of money is determined by the convenience of the people. They find for themselves what is the most convenient amount to carry in order that it shall be best adapted to meet their particular expenditures. If, then, money and expenditure are mutually adjusted to suit the convenience of the people, this implies that any increase in the amounts carried would (for a given price level) be inconveniently large.

To make the picture definite, let us suppose that the average per capita amount of money in actual circulation in the United States, outside of the United States Treasury and the banks, is about $15, and that some mysterious Santa Claus suddenly doubles the amount in the possession of each individual. This means that the average individual will have $30, where before he had $15. Now, statistics show that the average per capita amount in circulation changes only a few cents from month to month. While the amount of money carried by an individual will necessarily fluctuate because of his expenditures and receipts, in a large group of people the average amount carried by the several individuals composing the group will fluctuate but little. If, then, so large an addition to the total circulation is suddenly made as to put fifteen extra dollars per capita in the hands of the public, the first thought of most people will be how to get rid of this inconvenient addition to the money which they are carrying. If they should be inclined to hoard it in stockings or safes, or to bury

it in the earth, or to drop it into the sea, it would have no tendency to raise prices. Instead, however, they will seek to make some use of it either by expending it for goods or by depositing it in banks. Thus a few days after the supposed visit of Santa Claus, the surprised recipients of the extra money will, in most cases, have disposed of it in one of these two ways. To the extent that they dispose of it in the first way, — in the purchase of goods, — it is evident that there will be a tendency to raise prices, for the sudden expenditure of $15 per capita, even by a small fraction of the people of the United States, will mean a phenomenal rush upon the shops.

The average individual does not expend in actual money more than $15 in two weeks. This is about a dollar a day, or about $100,000,000 a day for the entire country. If within, let us say, five days from his windfall of $15 the average man should try to spend an extra sum of $15, the result would be $3 per day per capita, or $300,000,000 a day for the nation. This, in addition to the usual $100,000,000 a day, would make $400,000,000 a day, or four times the ordinary rate of expenditure. Such a sudden briskness in trade would astonish the shopkeepers and lead them promptly to raise their prices; otherwise, in many cases their stocks would be entirely depleted.

At first sight, it might seem that it would only require a few days for each one to get rid of his extra money so that the flurry in prices would, therefore, be only temporary; but such reasoning would be

fallacious; for we must not forget that the only way in which the individual can get rid of his money is by handing it over to somebody else. Society is not rid of it. If the shopkeepers, who under our Santa Claus hypothesis have already had their till money doubled mysteriously, receive in addition the surplus cash of their customers, they will now be the ones embarrassed with a surplus of cash and will, in their turn, endeavour to get rid of it, by purchasing goods for their business or by depositing it in banks. Since, then, the effort to get rid of money by transferring it merely results in somebody else having a surplus, the surplus in the community remains unchanged. Therefore, the effort to get rid of it and the consequent effect on prices will continue until prices have reached a sufficiently high level.

This conclusion cannot be avoided by supposing that most of the money is not spent in trade, but deposited in banks. The bankers whose deposits are thus suddenly swollen will now be the ones who will strive to get rid of the surplus cash. No banker wishes to have idle reserves, and each will make the increase in reserves the basis for an increase of business, including an increase of deposits. We have seen that this tendency results ultimately in preserving the relative amounts of the three magnitudes: money in circulation, money in bank reserves, and deposits based on these reserves. In the end, then, the doubling of society's money will mean a doubling (1) of the money in circulation, (2) of the money

in banks, and (3) of the deposits based on this money. In a short time it will also mean a doubling of prices, for as long as prices fail to be double what they were, there will be the same phenomenon of inconvenient surpluses. Individuals, tradesmen, bankers, etc., will be trying to get rid of these surpluses, and their efforts to get rid of them must tend to raise prices. When, however, prices have reached double their original level, there will be no longer any effort to get rid of surplus cash; for there will be no surplus cash. The $30 per capita which has thus been created will no longer seem excessive, in view of the fact that prices are double what they formerly were and that the persons carrying this money will, on the average, find their wages or incomes doubled likewise. Thus, if formerly the average individual was accustomed to spend $300 and to carry an average balance of $15, he will now spend $600 and carry an average balance of $30. The adjustment of the $30 relatively to $600 has exactly the same significance as the former $15 relatively to $300. In either case the relation is one to twenty, which means that the individual turns his money over, on the average, twenty times a year. Thus, in the end, a doubling of the quantity of money does not exert its effect in disturbing the velocity of circulation, but in raising the general level of prices.

It is worth noting that the imaginary example we have given represents, except in its details, exactly what actually happens when new gold is discovered.

Gold miners convert their product into money, sometimes using it as such in the form of nuggets or gold dust and sometimes taking it to the mint and converting it into coin. They find themselves in possession of bags full of money far beyond what they need as the most convenient amount of pocket money. If, for instance, one of these men has just received from the mint a thousand dollars in gold, he is almost sure to get rid of at least $950 of it as speedily as possible, either by spending it or by depositing it in the bank. In either case, he and the hundreds of others who are doing the same thing tend to raise prices in the community where they are spending their money or checks on the banks in which they deposit their money.

It was thus that prices rose in the mining camps of California a half dozen decades ago and in Colorado and the Klondike one or two decades ago. This local rise of prices then communicated itself to other places; for, as we have seen, the price level cannot in one locality greatly exceed that in a neighbouring locality without causing an export of money to the cheaper locality.

Thus, new money gradually finds its way into circulation throughout the world, raising prices as it flows from place to place. The process of raising prices consists in all cases of the effort to get rid of an inconvenient surplus of cash or deposits, a surplus which cannot be permanently got rid of by transferring it from hand to hand, but only by a rise of prices.

In this way it could be shown that an increase in the quantity of money will not affect the velocity of circulation of bank deposits (V') nor the volume of trade (T). It will merely increase the volume of deposits (M') and the level of prices (P). But, of course, a change of money (M) does not prevent other causes from acting at the same time; these other causes may and do affect the five factors M, M', V, V', and T, and often aggravate or neutralize the effect of money (M) on the level of prices (P). The effects of these other causes, however, are not the effects of money. So far as money *by itself* is concerned, its effect is only on deposits (M') and the price level (P) and is proportional to its quantity. The importance and reality of this proposition is not diminished in the least by the fact that the "other causes" seldom or never, as a matter of fact, remain quiescent and allow the effect on prices of an increase in money to be seen separately from effects of other causes. The effects of changes in money are always blended with the effects of changes in the other factors in the equation of exchange, just as the effects of gravity upon a falling body are blended with the effects of the resistance of the atmosphere.

Our main conclusion, then, is that, after careful study, we find nothing to interfere with the truth of the quantity theory, that variations in money (M) produce normally proportional changes in prices.

§ 3. An Index Number of Prices

We have been studying the causes determining the purchasing power of money, or its reciprocal, the general level or scale of prices. Hitherto we have not examined very carefully exactly what a "general level" of prices may mean, although in Chapter III, § 1, a simple imaginary case was considered in which the average price of bread, cloth, and coal was worked out. There was no need of defining a general level of prices so long as we assumed, as we have done hitherto, that all prices move in perfect unison. But, practically, prices never do move in perfect unison. If some prices (p's) do not rise enough to preserve our equation, others must rise more. If some rise too much, others must rise less. The case is further complicated by the fact that some prices cannot adjust themselves at all and some can adjust themselves but tardily. A price fixed by contract cannot be affected by any change coming into operation between the date of the contract and the date of its fulfilment. The existence of such contracts constitutes one of the chief arguments for a system of currency such that the uncertainties of its purchasing power are the least possible. Contracts are a useful device; and an uncertain monetary standard disarranges them and discourages their formation. Even in the absence of explicit contracts, prices may be kept from adjustment by implied

understandings and by the mere inertia of habit. And besides these restrictions on free movement of prices there are often legal restrictions; as, for example, when railroads are prohibited from charging over two cents per passenger per mile, or when street railways are limited to five-cent or three-cent fares. Whatever the causes of non-adjustment, the result is that the prices which *do* change will have to change in a greater ratio than they would were there no prices which do not change. Just as an obstruction put across one-half of a stream causes an increase of current in the other half, so any deficiency in the movement of some prices must cause an excess in the movement of others.

Another class of goods, the price of which cannot fluctuate greatly with other prices, are those special commodities which consist largely of the money metal. Thus, in a country employing a gold standard, the prices of gold for dentistry, of gold rings and ornaments, gold watches, gold-rimmed spectacles, gilded picture-frames, etc., instead of varying in proportion to other prices, always vary in a smaller proportion. The range of variation is the narrower, the more predominantly the price of the article depends upon the gold as one of its raw materials.

From the fact that gold-made articles are thus more or less securely tied in value to the gold standard, it follows also that the prices of substitutes for such articles will tend to vary less than prices

in general. These substitute articles will include silver watches, ornaments of silver, and various other forms of jewelry, whether containing gold or not.

A further dispersion of prices is produced by the fact that the special forces of supply and demand are constantly playing on each individual price, and causing relative variations among them, and although these variations cannot affect the general price level, they can affect the number and extent of individual divergencies above and below that general level.

It is evident, therefore, that prices must constantly change *relatively to each other*, whatever happens to their general level. It would be as idle to expect a uniform movement in prices as a uniform movement for all bees in a swarm. On the other hand, it would be as idle to deny the existence of a *general* movement of prices because they do not all move alike as to deny a general movement of a swarm of bees because the individual bees have different movements. The general movement of prices is expressed by an "index number" which gives the average level of prices at any time as compared with some other time used for comparison.

Besides the changes in individual *prices*, there will be corresponding changes in the *quantities* of the commodities which are exchanged at these prices respectively. In other words, as each p changes, the Q connected with it will change also, because

usually any influence affecting the price of a commodity will also affect the consumption of it.

We see, therefore, that it is well nigh useless to speak of uniform changes in prices (p's) or of uniform changes in quantities exchanged (Q's). Therefore, instead of supposing such uniform changes, we must now proceed to the problem of developing some convenient method of indicating by an *average* the general trend of the changes in prices or in quantities. We must formulate two composite or average magnitudes: the *price level* (P) or index number or "scale" of prices on the one hand and the *volume of trade* (T) on the other.

As we have seen in Chapter III, P is an average of all the p's and T is the sum of all the Q's. P is the "index number" of the general level of prices.

In order, in practice, to calculate P and T, suitable *units* of measure for the various articles must be selected. The ordinary units in which the various Q's are measured will not be the most suitable. Coal is sold by the ton, sugar by the pound, wheat by the bushel, etc. If we should merely add together these tons, pounds, bushels, etc., and call their grand total so many "units" of commodities, we should have a very arbitrary summation. It will make a difference in the result whether we measure coal by tons or hundredweights. The system becomes less arbitrary and more useful for the purpose of comparing price levels in different years if we use, as the unit for measuring any com-

modity, not the unit in which it is commonly sold, but the *amount which constitutes a "dollar's worth" at some particular year called the base year.* Then *every* price in the base year becomes exactly one dollar, and the *average* of all prices in that year also becomes exactly one dollar. In any other year, the average price (*i.e.*, the average of the prices of the arbitrarily chosen units which in the base year were worth a dollar) will be the index number representing the price level, while the number of such units will be the volume of trade. Thus, let us suppose, for simplicity, that there are only three commodities (bread, coal, and cloth), and let us use the accompanying table for facts to start with.

Year	Prices (in Dollars)			Quantities Exchanged		
	Bread (per Loaf)	Coal (per Ton)	Cloth (per Yard)	Bread (Millions of Loaves)	Coal (Millions of Tons)	Cloth (Millions of Yards)
1909 . . .	.10	5.00	1.00	200	10	30
1914 . . .	.15	6.00	1.10	210	11	35

We wish to compare the average price or price level in the year 1914 with that in 1909 as the base year, and also to reckon the total volume of trade in 1914 in comparison with that in 1909. If we were not desirous of taking great pains to secure the best results, we could use the above figures just as they stand — averaging the prices and add-

ing together the quantities. By this rough-and-ready method the average price per unit for 1909 would be (.10 + 5.00 + 1.00) ÷ 3, or $2.03; and for 1914 (.15 + 6.00 + 1.10) ÷ 3, or $2.42; the total trade for 1909 would be 200 + 10 + 30, or 240 million units; and for 1914, 210 + 11 + 35, or 256. That is, the price level would show a *rise* between 1909 and 1914 from $2.03 to $2.42, or a rise of 19.2 per cent, while the volume of trade would show a rise from 240 to 256, or 6.6 per cent.

But the simple method just used gives too much weight in the price comparison to coal, the price of which happens to be expressed by a large number, simply because it is measured by a large unit. One way to remedy this disproportionate weighting is to measure all articles by one unit, as the pound; but a better way is that already described above, viz., to use as our unit "the dollar's worth in 1909." The dollar's worth of bread in 1909 was evidently ten loaves, the dollar's worth of coal, the fifth of a ton, and that of cloth, the yard. Taking these units, we now have: —

Year	Prices (in Dollars)			Quantities		
	Bread (per Ten Loaves)	Coal (per ⅕ Ton)	Cloth (per Yard)	Bread (Millions of Ten Loaves)	Coal (Millions of ⅕ Tons)	Cloth (Millions of Yards)
1909 . .	1.00	1.00	1.00	20	50	30
1914 . .	1.50	1.20	1.10	21	55	35

The average price in 1909, on the basis of these new units, is simply \$1, since this is the price of each individual article; while the average price in 1914 is, if we take the simple arithmetical average, (\$1.50 + \$1.20 + \$1.10) ÷ 3, or \$1.27. The total volume of trade in 1909 is (in millions of units) 20 + 50 + 30, or 100; and in 1914, 21 + 55 + 35, or 111. Thus, according to this reckoning, the price level has risen from \$1.00 to \$1.27, or, as it is usually expressed, from a base of 100 per cent to a height of 127 per cent — a rise of 27 per cent; while trade has increased from 100 million units to 111 million units, an increase of 11 per cent.

We may slightly improve the above method by taking for 1914 a "weighted" average of prices instead of a simple average. It is found by dividing the total *value* of all the goods by their total quantity. This is a better method because, in the result, it gives less weight to the commodities less dealt in, such as bread. The average for 1909 will still be \$1.00, for that is the price for each individual commodity; but the average for 1914 will be slightly different. The total value is (in millions of dollars) 1.50 × 21 + 1.20 × 55 + 1.10 × 35, or 136 million dollars, and the total quantity is, as we have already seen, 21 + 55 + 35, or 111 million units; consequently, the average price is 136 ÷ 111, or \$1.23. According to this last and best method, then, the price level has risen from \$1.00 (or 100 per cent) to \$1.23 (or 123 per cent). That is, the index numbers

are 100 per cent for 1909, and 123 per cent for 1914. This indicates a rise of 23 per cent.

The results of the three methods of reckoning the average rise of prices differ slightly, showing respectively a rise of 19, 27, and 23 per cent. Other methods [1] of which many are possible, would also differ slightly. No method gives an absolutely perfect index of changes in price levels, but the last one worked out above is as good as any. The main point in any system of averages is to give great weight to the great staples of trade, and little weight to the insignificant articles. Radium has fallen in price enormously in the last few years, but radium is so unimportant as an article of commerce that its great fall ought not to be allowed in our reckoning to have much effect on the index number for the general price level.

Fortunately, it is found, in practice, that most methods of computing index numbers show substantially the same general changes in price levels.

[1] The reader who is interested in a study of the comparative merits of some two score methods of computing index numbers is referred to the writer's *The Purchasing Power of Money*, New York (Macmillan), 1913, Chapter X, and appendix to Chapter X.

CHAPTER X

THE HISTORY OF PRICE LEVELS

§ 1. Early Records

It is impossible to have absolutely accurate index numbers, but those constructed for recent years by the United States Bureau of Labour are accurate enough for all practical purposes. For the remote past we have only very rough index numbers, because the records of prices in past times are so defective. These rough index numbers are sufficient, however, to show that the general trend of prices during the last ten centuries[1] has usually been

[1] The authorities to whom we owe comparisons with remote centuries are D'Avenel, Hanauer, and Leber. Comparisons with still more remote times have been made while this book was going through the press by Prof. J. F. Ferguson of Bryn Mawr who writes me that by using data from the "ediet of Diocletian" 301 A.D. the prices of eleven kinds of foods are found to average 50 to 60 % of their prices in the United States in 1912 A.D. Incidentally we may mention the fact that Prof. Ferguson also works out the relative wages for ten occupations, showing that the Roman wages in 301 A.D. were only 8 to 20 % of present American wages. Thus the Roman workman received less than one tenth of the money wages prevailing at present and paid more than half as much for food; so it would appear that he enjoyed less than one-fifth as much real income as a present-day American labourer.

upward. Judging from some records for the eighth and ninth centuries, we may conclude that prices are now five to ten times as high as then — 1100 years ago — and from four to six times as high as in the period between 1200 and 1500 A.D. Since the last date, that is, practically, since the discovery of America, prices have almost steadily risen. Figure 5 shows the estimates — which, of course, are only very rough — of D'Avenel for France.

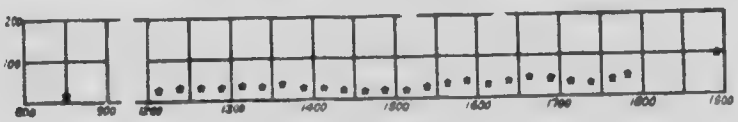

FIG. 5. — France

They cover continuously the period between 1200 and 1790 and include comparisons with 850 and 1890.

A recent book, *The Literary Profession in the Elizabethan Age*, by Phœbe Sheavyn, brings out the resemblance between the conditions in the sixteenth century and those of to-day.

"Meanwhile, prices were rising rapidly, owing partly to increased consumption, partly to the influx of silver from the West. In the latter half of the sixteenth century, corn cost from three to ten times the average price of the previous three centuries. Sugar rose from fourpence to half a crown. Stowe tells us that not only corn, 'but all things else, whatever sustenance for man, was likewise raised without all conscience or reason.' Rents increased

exorbitantly during the same period. A farm which in the earlier part of the century let for ten shillings, would fetch in 1583 as much as ten pounds."

Bishop Fleetwood in 1707 published some statistics which led him to believe that "£5 two hundred and sixty years ago was equivalent to £28 or £30 now [1707]."

The successive opening of gold and silver mines has been largely responsible for the repeated upward movements of prices. For the first half century after the discovery of America the annual average production of gold was less than five million dollars. (To-day it is a hundred times as great and that of silver about the same.) A century later, after the opening of the rich Potosi mines of Bolivia, the production of silver was four times as great, averaging 18 millions of dollars a year. The New World mines began to pour their product into Europe; first into Spain, the chief owner of the mines, then, by trade, into the Netherlands and other parts of Europe. Accordingly, as the economist, Cliffe Leslie, showed, prices rose first in Spain, then in the Netherlands, and then in other regions. The rise of prices in the sixteenth century was so rapid as to constitute a veritable price revolution.

The following table[1] shows the estimates which have been made of the stock of the precious metals in Europe at the different century years and the

[1] For details, see Irving Fisher, *The Purchasing Power of Money*, pp. 234–237.

price levels roughly computed by various economic historians.[1]

Date	Stock of Precious Metals in Europe in Billions of Dollars	Relative Price Level (as % of Price Level of 1800)
1500	170	35
1600	550	75
1700	1450	90
1800	1850	100
1900	5890	125 (?)

§ 2. The Nineteenth Century

Beginning with the close of the eighteenth century we have more exact statistics of price movements. Figure 6, which is formed by joining together the statistics of Jevons and Sauerbeck, shows with considerable accuracy the changes in the general price level in England from year to year from 1782 to 1913 inclusive.[2]

The light line of Figure 7 reproduces the curve of English prices in Figure 6 from 1840 to 1913.[3] Figures

[1] It will be seen from this table that the increase in prices did not keep up with the increase in the stock of metals. This was presumably due to the increase in the volume of trade.

[2] The prices between 1801 and 1820, during which England was on a basis of depreciated paper money, are reduced to the gold standard.

[3] This curve is made from the calculations of G. H. Knibbs, of Melbourne, statistician of Australia, being formed by combining the figures of Sauerbeck, the *Economist*, and the British Board of Trade.

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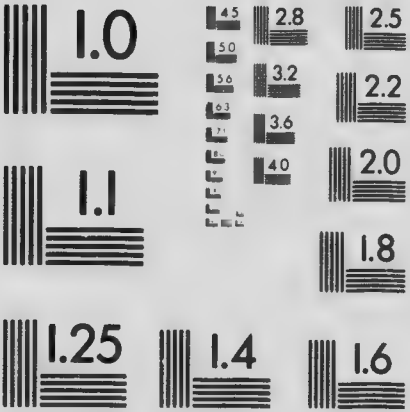

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8 to 22 inclusive present in their light lines the price curves, respectively, of the United States,[1] Canada,[2] Germany, France, Belgium, Holland, Denmark, Italy,

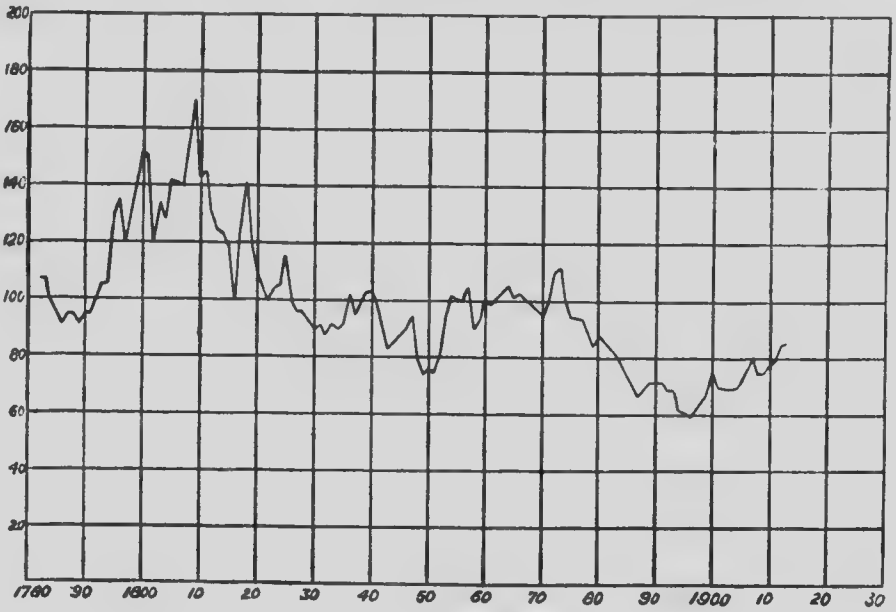


FIG. 6. — England

Austria, Spain, Australia, New Zealand, New South Wales, Japan and India.[3] The dark line in each

[1] The figures for the United States are those of the Aldrich Senate Report on Wages and Prices, supplemented since 1890 by the statistics of the Bureau of Labor, and [illegible] reduced by Knibbs so that the price level of 1911 may be 100 per cent.

[2] These Canadian figures are those of Mr. R. H. Coats, labour statistician of Canada, and are here reduced in accordance with Knibbs' calculations to make the index number for 1911 appear as 100 per cent.

[3] The above-named curves are, for the most part, formed from the figures of Knibbs, which, in turn, are taken from various available sources. The figures for Holland, Spain,

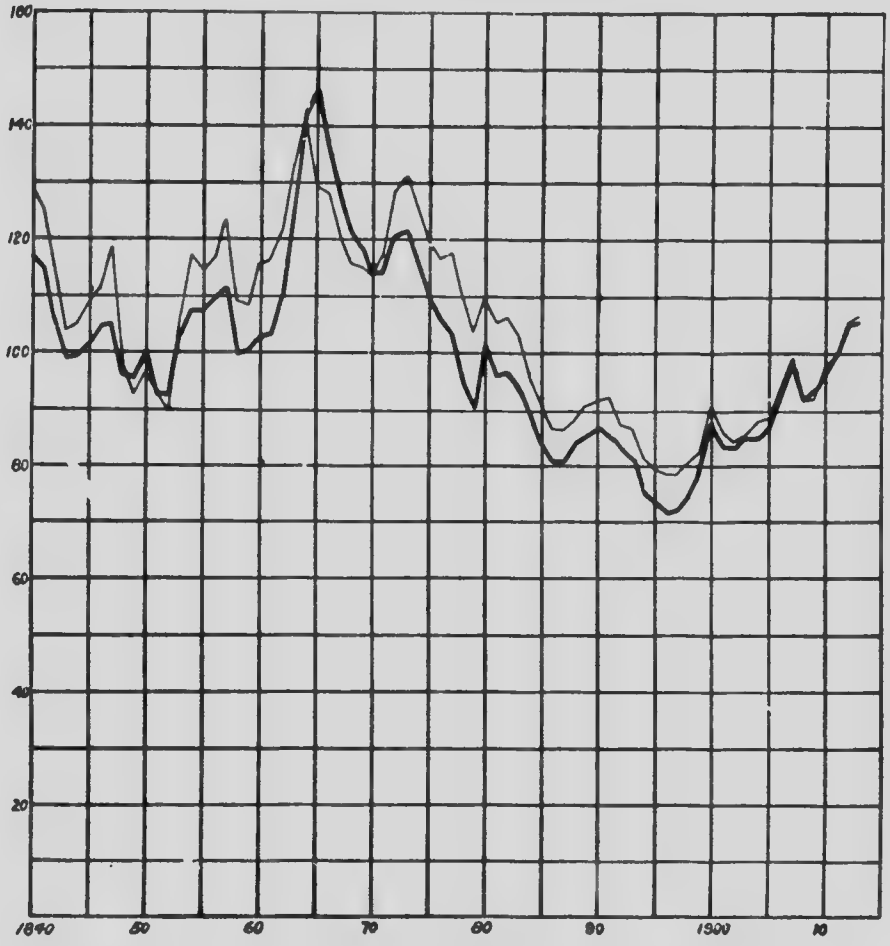


FIG. 7. — England

diagram represents the average price movement of the countries of the world.[1] It will be seen that

Japan, and India are not from Knibbs, but from the *Bulletin de l'Institut Internationale de la Statistique* and other statistical publications.

[1] This curve is also from Knibbs' calculations, and includes, beginning with 1840, England and the United

the price movements of England, the United States and Canada are closely similar to those of the world in general. In the curve for the United States, however, a discrepancy in the similarity appears about 1865, as our Civil War and the "greenbacks" then issued caused American prices to soar far above those of other lands. These inconvertible notes, *i.e.*, the "greenbacks," depreciated so greatly that the price level in the United States actually doubled between 1861 and 1865.[1]

The statistics of the three countries just mentioned, namely, England, the United States and Canada, are the best price statistics which we have, and show a remarkable family likeness, since, in general, each agrees so closely with the average for the world.

The statistics upon which the diagrams for the remaining countries are based, are not so good, as usually they do not include so many commodities. This probably explains why in some of these countries we do not find so perfect an agreement as we probably would find if we had more perfect statistics. However, even with the imperfect data from which these curves are constructed, there is, in general, a striking similarity between the average

States; from 1847, France; from 1851, Germany; from 1861, New Zealand and Australia; from 1890, Belgium, Italy, and Canada. All the statistics are reduced so that the price level of 1911 shall appear as 100 per cent.

[1] The "greenback" standard existed in the United States between 1862 and 1878 inclusive.

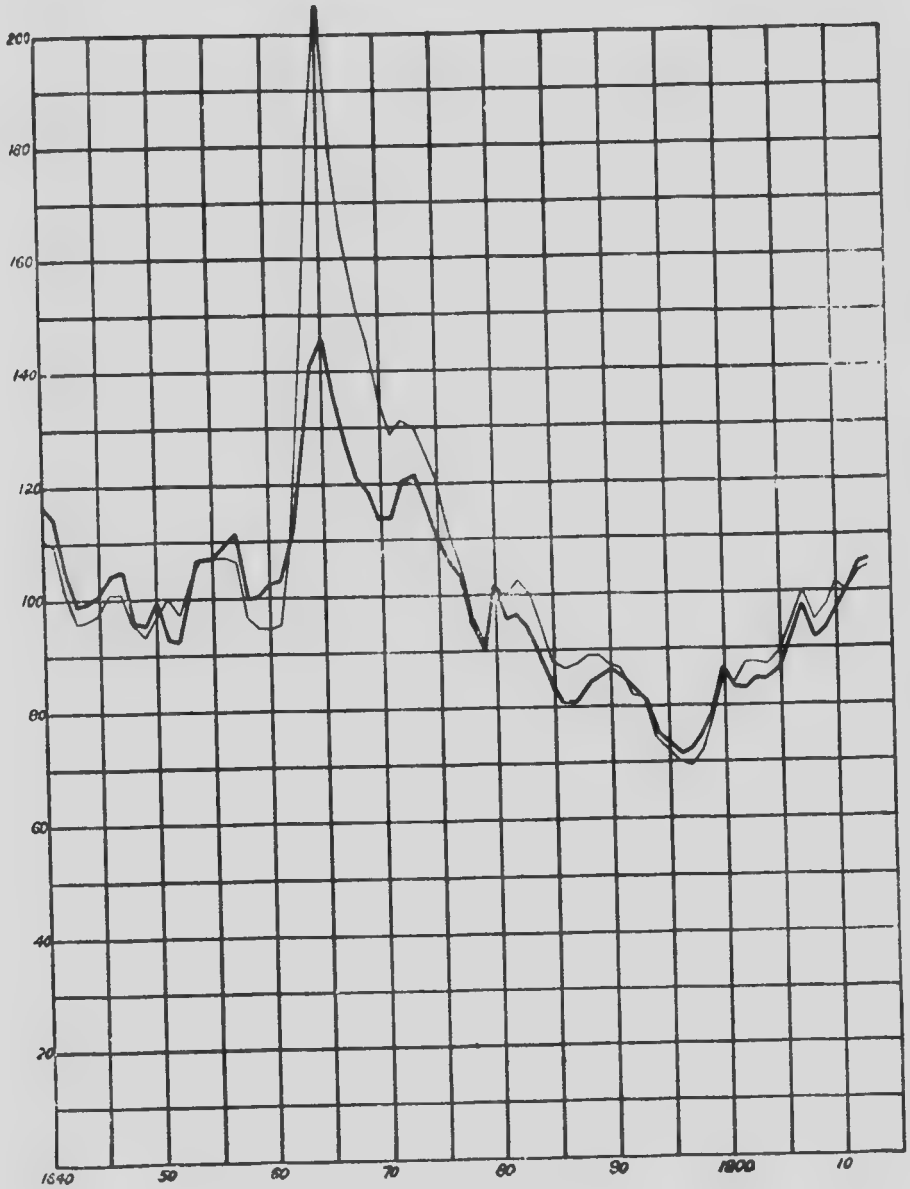


FIG. 8. — United States

world prices (as shown by the dark curve in each case) and the prices of the particular country mentioned (as shown by the light curve in each case).

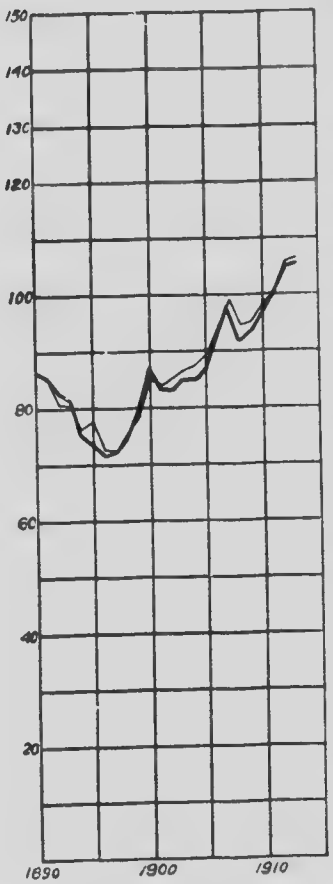


Fig. 9. — Canada

The most striking fact, therefore, in regard to the price movements in various countries is their similarity. This, of itself, is a very good reason for suspecting some common world-wide cause to be at work, such as the gold supply, instead of the coincidence of local causes in different countries, such as droughts, tariffs, trusts, etc.

It will be noted, however, that the curves for India and Japan prior to the middle of the '90's, disagree with the world curve. The reason for this discrepancy will be made clear a little later in the present section.

The main periods of price movements, then, since 1789, in all gold standard countries for which we have statistics may be stated approximately as given below in the first column. It is impossible to secure very

exact statistics of the volume of money in circulation, much less of credit currency and the volume of trade and still less of the velocities of circulation of money and deposits. The following table, therefore, merely notes in the last column any increase in the stock of money metals.[1]

Date	Prices	Stock of Money Metals in Europe
1789–1809 . . .	rose	increasing
1809–1849 . . .	fell	stationary
1849–1873 . . .	rose	increasing
1873–1896 . . .	fell	increasing slightly
1896–present . . .	rose	increasing

The question now is — do the facts of the foregoing table coincide with our theory of price levels? Their agreement is, in fact, somewhat remarkable in view of the complete lack, not only of exact statistics on the volume of trade and of all statistics whatever on velocity of circulation, but also of statistics on the volume of bank-notes, government notes, and deposit currency.

We know, however, that modern banking, which had scarcely developed at all before the French Revolution, developed rapidly throughout the nineteenth century. It is also known that banking and deposit currency developed more rapidly during the third period in the table (1849–1873) than during

[1] *History of Precious Metals*, Alexander Del Mar, p. 449.

the fourth (1873–1896), which fact contributes somewhat to explain the contrast between the price movements of these two periods.

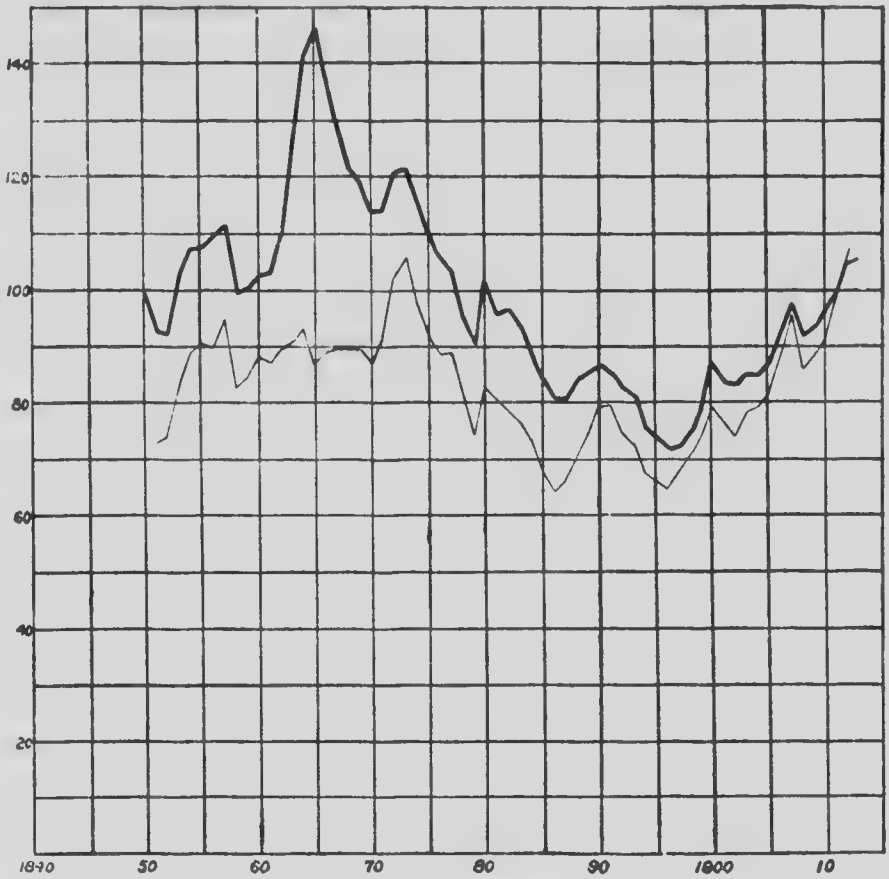


FIG. 10. — Germany

Sometimes the circulating media shot ahea of trade and then prices rose. This was undoubte ıly the case in the periods 1789–1809, 1849–1873, and 1896 to the present time, for in all three of these

periods it is known that circulating media increased with unusual rapidity, while there is no reason to

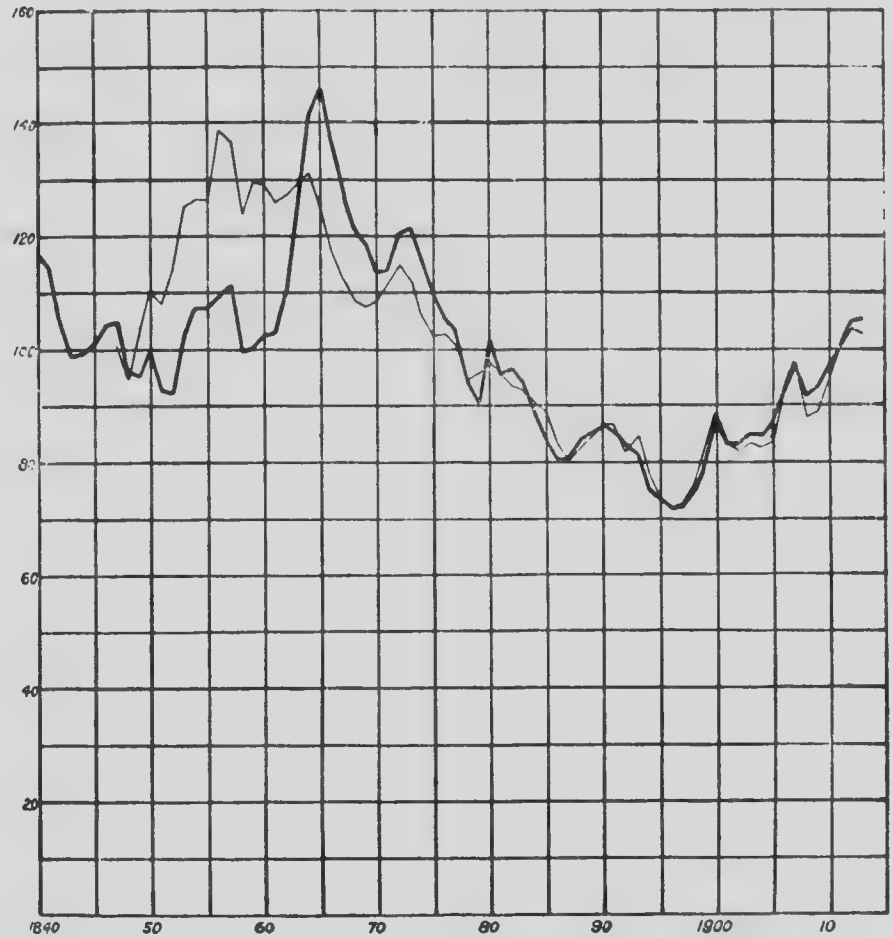


FIG. 11. — France

believe that trade increased especially fast. In fact, in the last-named period, in which we are now living, there is strong evidence that trade is lagging

behind media of exchange and by about the right amount to explain the rise of prices.

On the other hand, we may reasonably infer that circulating media lagged behind trade in the periods

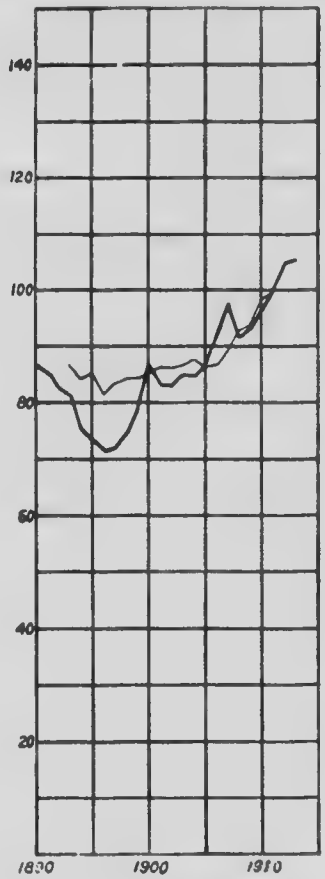


Fig. 12. — Belgium

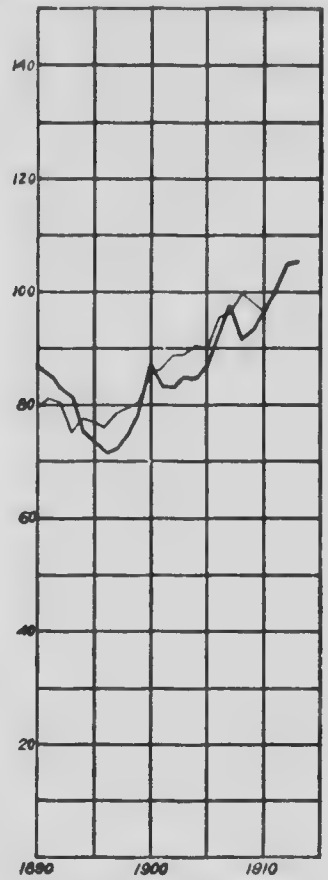


Fig. 13. — Holland

1809–1849 and 1873–1896, for in the former case the stock of circulating media did not increase at all and in the latter case it increased but slightly,

whereas there is evidence that the volume of trade increased in both periods.

We may, therefore, summarize the course of price movements during the nineteenth century by the following general statements: —

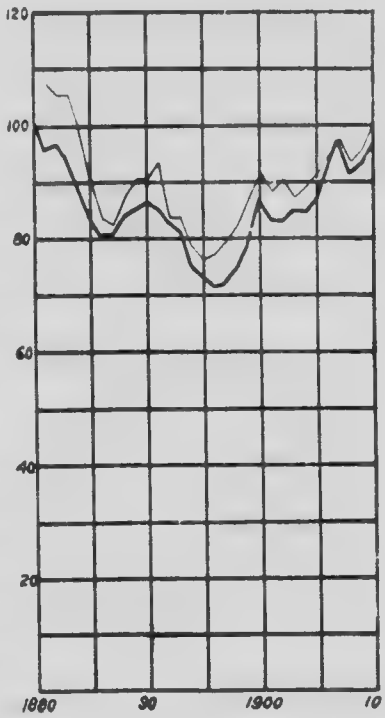


FIG. 14. — Denmark

1. Between 1789 and 1809 prices rose rapidly. The index numbers of Jevons for England which give us the first accurate picture of price movements increased from 85 to 157. That is, prices practically doubled in twenty years. This rise was doubtless due to the increased stock of gold and silver, which in turn was due to their large production during this period as compared with the periods before and after. The production of silver was especially great. The Napoleonic wars, with their destruction of wealth and interference with trade, probably exercised some influence in the same direction.

2. Between 1809 and 1849 prices fell. The fall in England was measured by Jevons as a fall from 157

to 64. That is, in forty years prices were reduced to less than half. This fall was presumably due to the lull in the production of the precious metals, which prevented the aggregate stock from keeping pace with the volume of business. Indeed, the aggregate stock remained stationary, while the volume of business must have increased greatly. Even the development of bank currency was insufficient to offset the continued increase in the volume of business. It is interesting to observe that this period of falling prices was interrupted by a temporary rise after 1833, which Jevons was at a loss to account for, but which may perhaps be explained by the inflow of Russian gold after the discoveries of gold in Siberia in 1830.

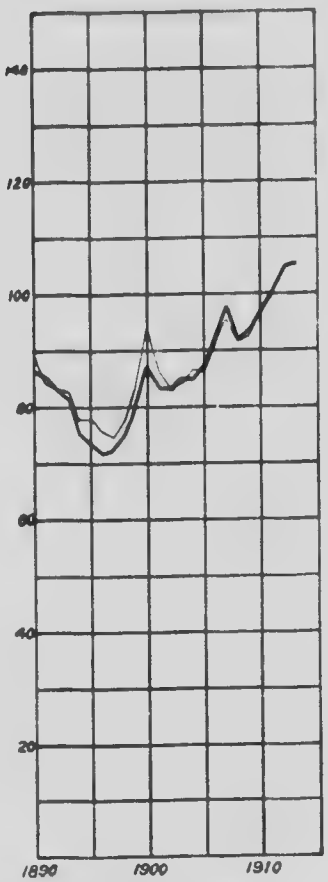


FIG. 15. — Italy

3. Between 1849 and 1873 (although with two notable interruptions) prices rose. They rose, according to Jevons' figures supplemented by Sauerbeck's, from 64 to 86, and according to Sauerbeck's

alone, from 74 to 111. That is, in 24 years prices increased, according to one calculation, by one-third; according to another, by one-half. A sim-

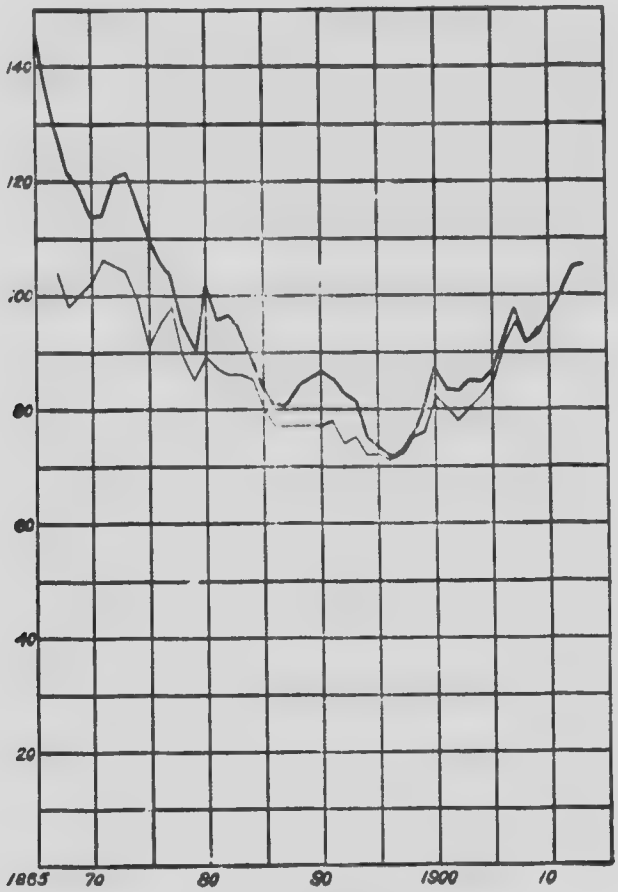


FIG. 16. — Austria

ilar rise occurred in the other countries for which there are statistics covering this period, namely, Germany, France, and the United States. This

rise was presumably in consequence of the gold inflation following the famous California gold discoveries in 1849 and Australian discoveries in 1851 and 1852. The simultaneous rapid development of banking contributed to the same result.

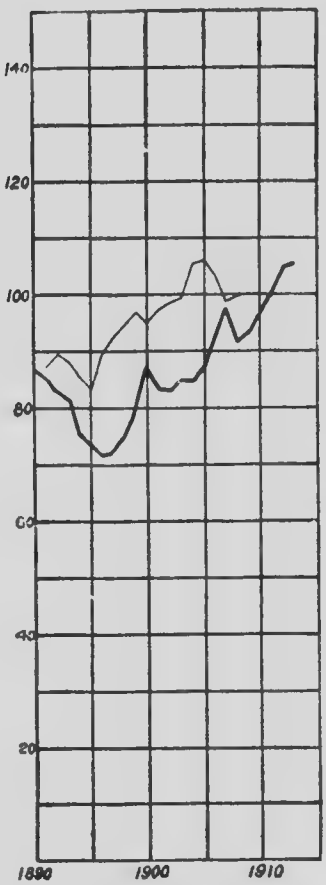


FIG. 17. — Spain

4. Between 1873 and 1896 prices fell in all countries using the gold standard, as the diagrams show. This fall was presumably due to the slackening in the production of gold; to the adoption of the gold standard by nations previously on a silver basis, and the consequent withdrawal of gold by these new users from the old; to the arrest of the expansion of silver money consequent on the closure of mints to silver; to the slackening in the growth of banking; and to the ever present growth of trade.

During the long fall of prices from 1873 to 1896, country after country adopted the gold standard. Germany adopted the gold standard in 1871–1873,

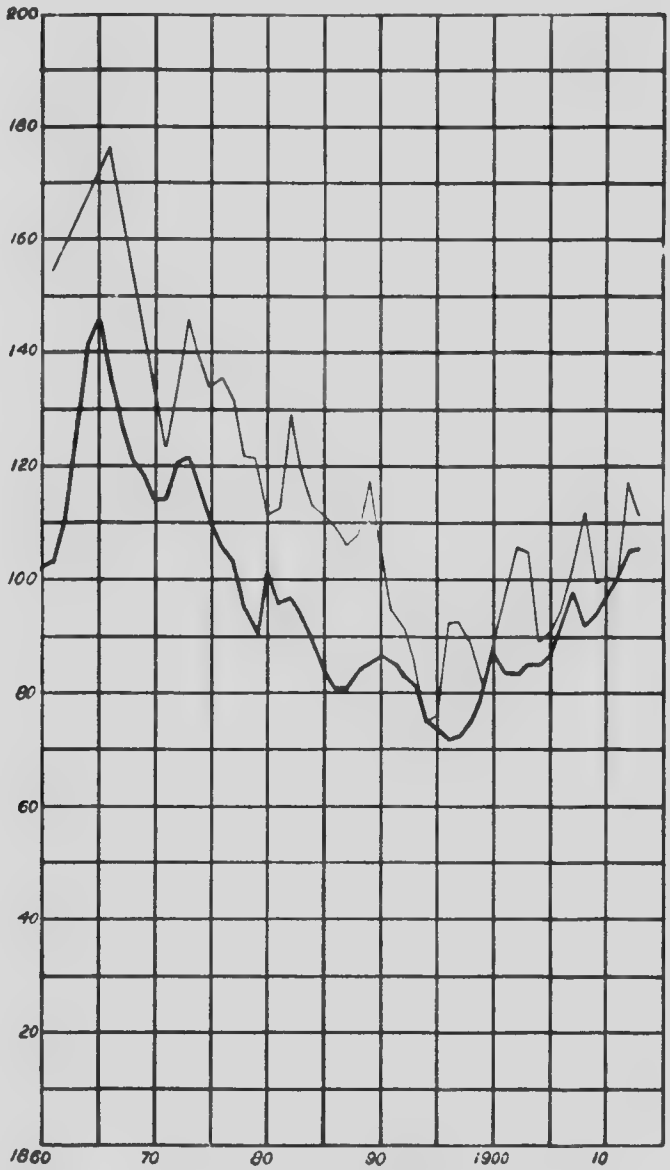


FIG. 18. — Australia

thus helping to render impossible the maintenance of bimetallism by the Latin Union (France, Belgium, Switzerland, Italy, and Greece). The Scandinavian monetary union adopted the gold standard in 1873. Between that date and 1878 the countries of the Latin Union suspended the free coinage of silver and came practically to a gold basis. In the United States the demonetization of silver in 1873, the so-called "crime of '73," signified that with resumption (which took place in 1879), the country would come to a gold basis. The Netherlands virtually adopted the gold standard in 1875–1876, Egypt in 1885, Austria in 1892, India in 1893, Chili in 1895, Venezuela and Costa Rica in 1896, Russia, Japan, and Peru in 1897, Ecuador in 1899, Mexico in 1905. In fact, most countries of importance have now definitely adopted the gold standard.

The figures given in the preceding table apply only to gold countries. But about 1873 gold and silver parted company; bimetallism ceased to hold them together. It is interesting, therefore, to ask whether the movement of prices in silver countries continued like that in gold countries. We find it did not, as already pointed out on the diagrams of India and Japan, and as was to be expected by those who realize that price movements have a monetary side. Prices rose in India, as shown by the relative index numbers, from 107 in 1873 to 140 in 1896; in Japan from 104 in 1873 to 133 in 1896; and in China from 100 in 1874 to 109 in 1893. These

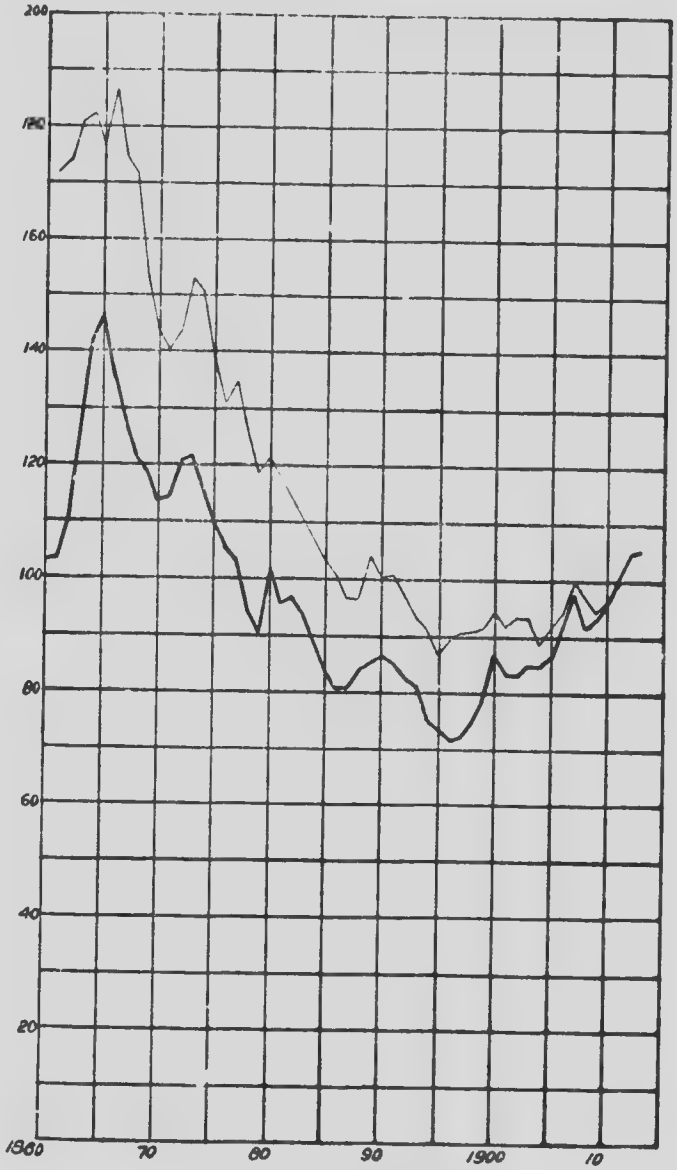


FIG. 19. — New Zealand

figures, although not as reliable and representative as the figures for gold countries, agree with each other in indicating a rise of prices in silver countries. The amount of rise is differently indicated, ranging roughly from 10 per cent to 35 per cent. The following table shows the general contrast between prices in gold and silver countries as between 1873–1876 and 1890–1893, the last year being that of the closure of the Indian mint to silver.

	GOLD COUNTRIES	SILVER COUNTRIES
1873–1876	100	100
1890–1893	78	117

We see that prices in the gold countries fell a little more than 20 per cent, while prices in silver countries rose a little less than 20 per cent. If some way had been contrived by which gold and silver could have been kept together (say by world-wide bimetallism), prices would not have fallen so much in gold countries, or risen so much (if at all) in silver countries.

After Japan joined, and India, in effect, rejoined the gold nations, in the '90's, the price movements of these two countries have corresponded with those of other gold-standard countries. As to statistics earlier than 1873 there seem to be none available for the Orient except those of Robertson for India which begin with 1861. These show some similarity between the price movements of the

period 1861–1873 in India to the price movements in the western world at that period. It would be

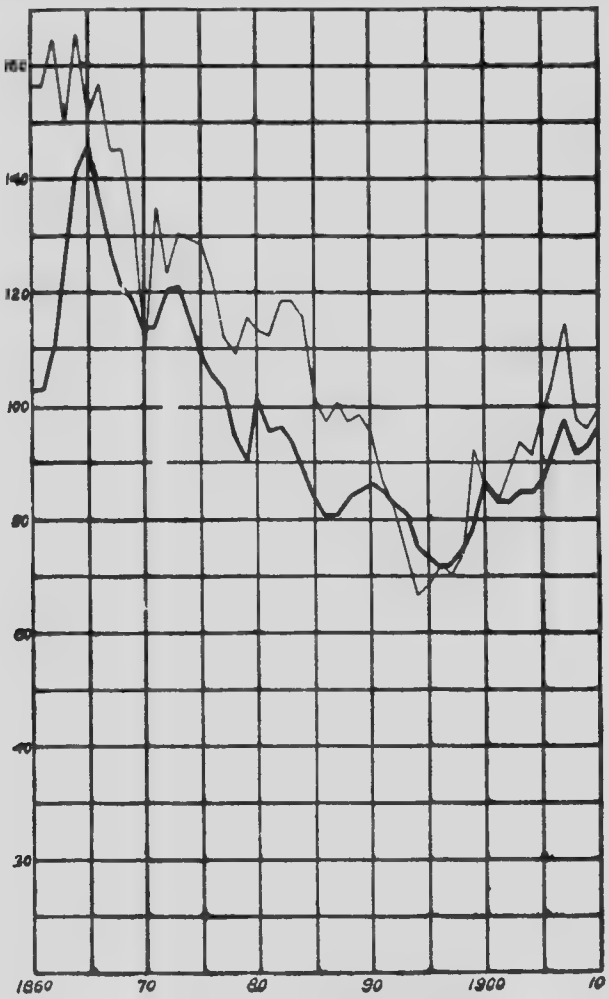


FIG. 20. — New South Wales

interesting if some student of Japan would work out index numbers earlier than 1873. We could thus

tell whether in that early period, when, because of French bimetallism, the Orient and the Occident enjoyed a stable par of exchange, the Oriental and

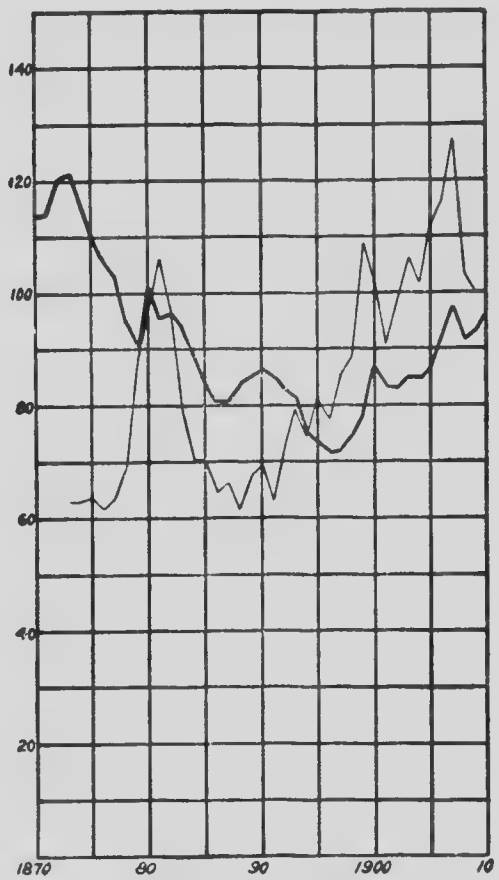


FIG. 21. — Japan

Occidental price movements corresponded or not. But so far as we have data to tell us, we find that the Oriental and Occidental prices moved apart

when their monetary standards moved apart, but moved together when their monetary standards were the same. Nothing could better illustrate the para-

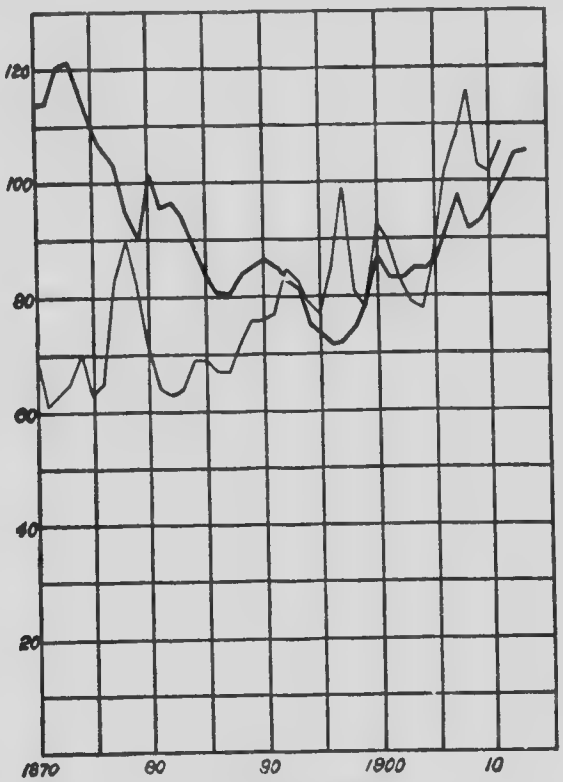


FIG. 22. — India

mount influence of the monetary standard on price movements.

5. From 1896 to the present, prices have been rising. The causes which have produced this rise and which are still at work will be discussed in the next section.

§ 3. The Present Price Movement

We come now to the upward movement of prices, beginning with 1896 or 1897, which has given rise to the present world-wide complaint over the "high cost of living." This upward movement is in sharp contrast with the downward movement occurring in the period between 1873 and 1896. During the last eighteen years in every country for which we have statistics—all gold-standard countries—prices have risen rapidly. This is shown by the diagrams already given. As these diagrams indicate, the rise of prices between 1896 and 1913 has been approximately 65 per cent for Germany, 50 per cent for the United States, 45 per cent for Canada and France, and 35 per cent for England.

As is evident, statistics do not all agree as to the extent of this movement, but they do all agree as to its direction.

Their agreement in this regard would probably be even closer than it is, if the same system of statistics were used in all countries. That this is true may be reasonably inferred from the fact that two different statistical methods applied to the same country often show as great a difference as the differences found among different countries. For instance, the statistics of price movements in Canada and the United States are not as dissimilar as are those of Sauerbeck and the Board of Trade for England or of the "Hooker" and the "Hamburg" statistics for Germany.

Of course, some prices have not risen but have actually fallen. Others have risen much more than the average. This is particularly true of agricultural and forest products. Their prices have nearly doubled. The prices of securities have also moved, some up and some down. Bonds, both public and private, have fallen. Good stocks, in general, have risen. We must not make the mistake of looking at the prices of particular commodities when our question is one of the general price level.

Neither must we confuse the issue by cheap aphorisms such as that which would make us believe there is no high cost of living, but only a "cost of high living." While there can be no question that standards of living have advanced, there can be no reasonable doubt that prices have risen; in other words, that the actual cost of buying a given quantity of staple commodities is greater to-day than it was eighteen years ago; or in still other words that the purchasing power of the dollar has fallen.

Again it may be true, and probably is, that the purchasing power of our *incomes taken as a whole*, has increased, so that we actually have more goods than formerly. But if so, this is not because prices are any lower, *i.e.*, because the purchasing power of the dollar has increased, but because the *number* of dollars in our income has, on the average, increased.[1]

The broad fact, then, is that prices are rising all

[1] For facts concerning the wage-earner, however, see Appendix to this Chapter.

over the world. And anything that is happening all over the world it would seem must have a world-wide cause.

The only cause which fits in with the principles governing price levels as well as with all previous human experience is *inflation* — inflation of money and of credit currency. In fact, the rise of prices in the United States for which we have the fullest statistics is almost exactly what we should expect and could calculate from the known changes in money, deposits, their velocities, and trade.[1]

For the last eighteen years we are able to construct for the United States fairly accurate estimates of all the factors, M, M', V, V', P, T, in the equation of exchange. The statistics of the magnitudes for the eighteen years mentioned are all represented in Figure 23. In this diagram the equation of exchange for each year is represented by the mechanical balance described in a previous chapter.

We note that in the years considered every factor has greatly increased. The quantity of money in circulation (M), represented by the purse, has about doubled; bank deposits subject to check (M'), represented by the bank-book, have about trebled; the volume of trade (T), represented by the weight at the right, has increased about two and a half fold;

[1] For full discussion see Irving Fisher, *The Purchasing Power of Money*, Chapter XII and Appendix to Chapter XII; also articles on "The Equation of Exchange" in *The American Economic Review*, for June, 1911, 1912, 1913, and 1914.

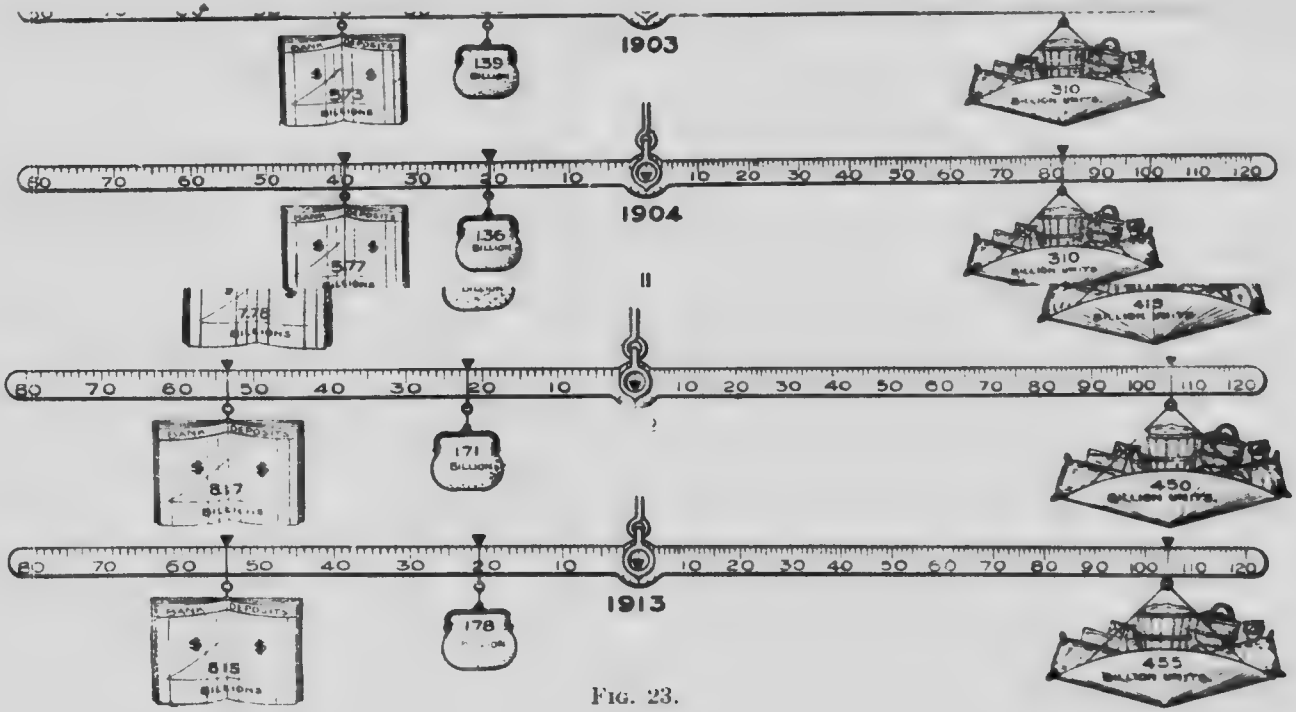


FIG. 23.

The weight symbolizing a purse, represents **M**, the money in circulation in the United States [illegible] money outside of the U. S Treasury and the banks). It is usually between one and two billions

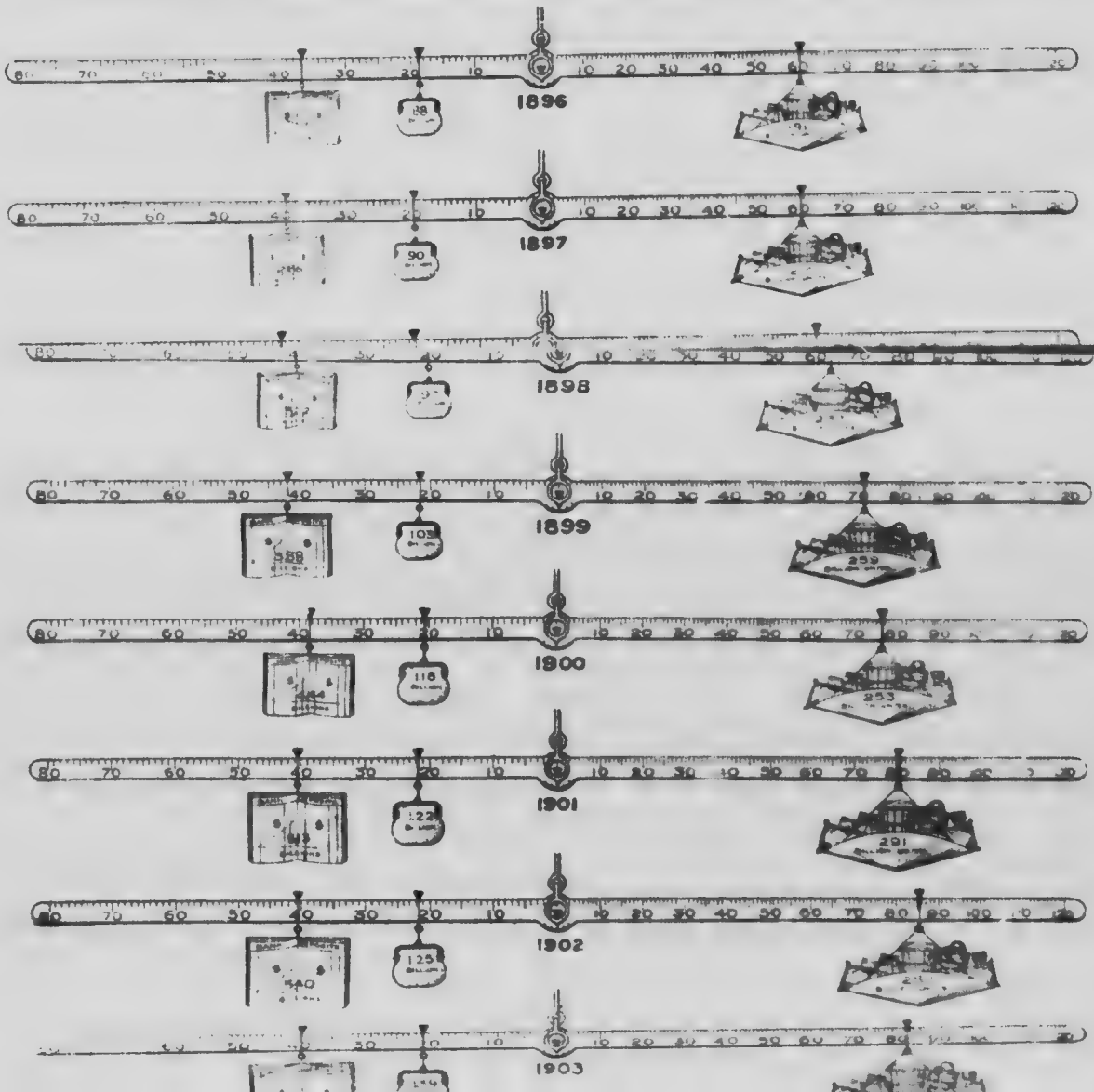
The leverage of this purse, or its distance from the fulcrum, represents **V**, the velocity of circulation of money Money usually turns over about twenty times a year.

The weight symbolizing a bank book, represents **M'**, the bank deposits against which checks are drawn (usually from three to eight billions).

The leverage of this bank book represents **V'**, the velocity of circulation ("activity") of these deposits. The deposits are usually turned over from forty to fifty times a year.

The weight symbolizing a grocer's tray, represents **T**, the volume of trade expressed in "units" each "unit" being the quantity which could be purchased for $1 in 1909.

The leverage of this tray represents **P**, the index number of prices measured as a percentage of the prices of 1909.



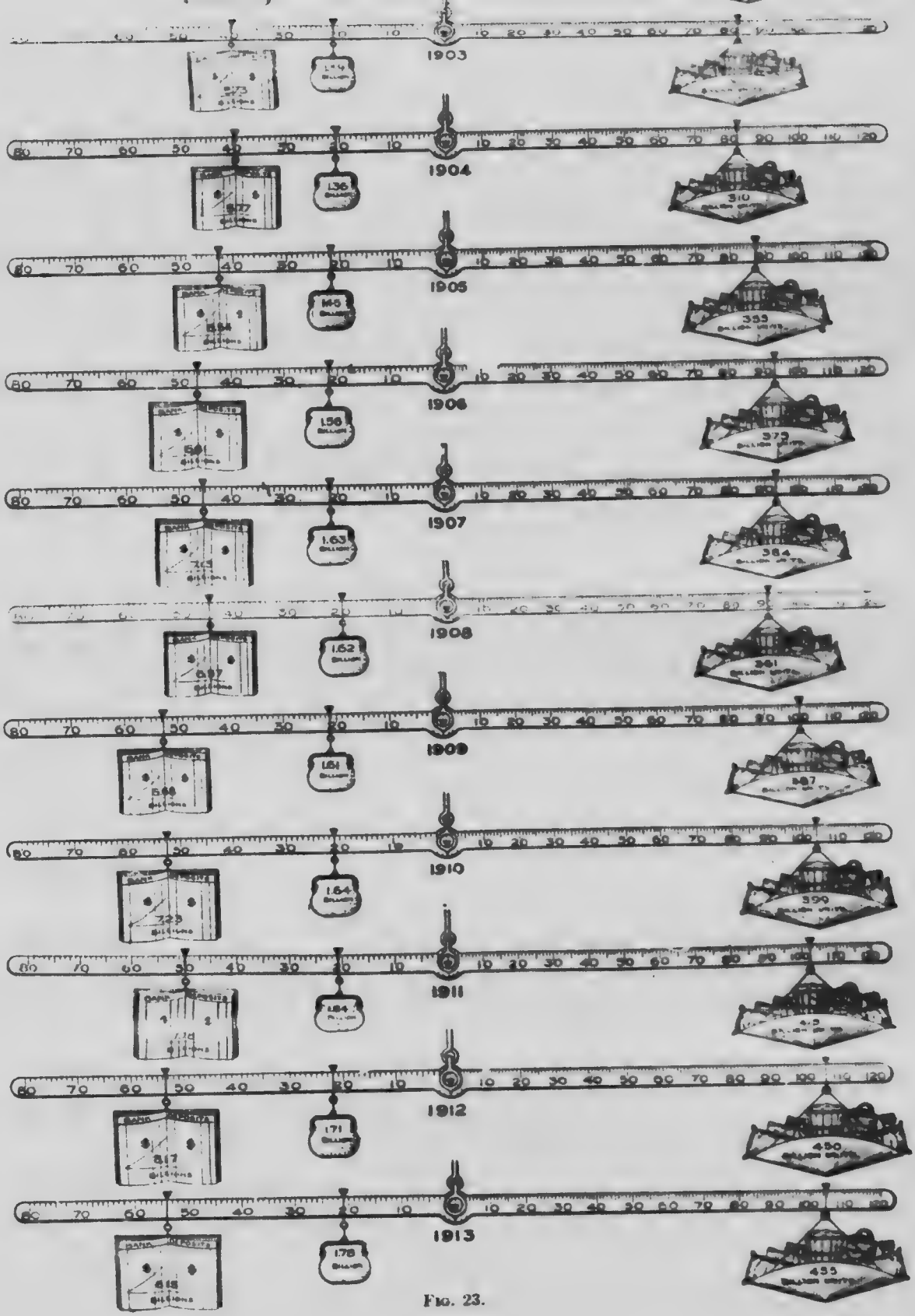


Fig. 23.

the velocity of circulation of money (V), represented by the leverage of the purse, or its distance from the fulcrum, has increased slightly; and the velocity of circulation of bank deposits (V'), represented by the leverage of the bank-book, has increased about fifty per cent.

As the net result of these changes, the index number of prices (P), or the leverage of the weight at the right, has increased about two-thirds. The price level of 1909 is taken as 100 per cent. On this scale the price level of 1896 is 60 per cent, and that of the other years as indicated.[1]

Let us express the matter in terms of cause and effect. The diagram affords a picture of the fact that increases in money and deposits and in their velocities (represented, respectively, by the in-

[1] The total increase from 1896 to the present is about 75 per cent, which is more than the increase of wholesale prices, owing principally to the fact that the present statistics include, besides wholesale prices, the prices of shares. The volume of trade for any year is represented as the number of "dollars' worth" on the basis of the prices in 1909. Thus the actual value of trade in 1909 was $387,000,000,000, *i.e.*, 387 billion units of goods of various kinds the units being such as to be each worth one dollar in 1909. The trade in 1912 was 450,000,000,000 of *these same units* (*i.e.*, such as were worth $1 each in 1909). Similarly, the trade in 1896 was 191,000,000,000 of these units. As the index number of prices shows that the price level of 1896 was only about 60 per cent of the price level of 1909, the actual value of the trade in 1896 was only $114,600,000,000. This is PT for 1896, *i.e.*, 191 billion units (each worth $1 in 1909) at 60 cents each, the price of a unit in 1896.

creased weights of purse and bank-book, and their increased distances from the fulcrum) have necessitated an increase in average prices (represented by the increased distance of the tray from the fulcrum) in spite of the increased volume of business which has been transacted (represented by the increased weight of the tray).

For other countries than the United States, we have no corresponding exact statistics for the five factors in the equation of exchange. We do know, however, in a general way that the money (M) in the civilized world has been increasing rapidly. We have a few statistics as to money, both metallic and paper. Edmond Théry in a recent article, the English translation of which is published in *The Market World and Chronicle* for April 18, 1914, shows that the gold money in the world increased 54% between 1902 and 1912. He also points out that the bank notes of European banks of issue increased from $3,130,000,000 to $4,860,000,000 between 1902 and 1912, an increase of 55%. A study by the writer[1] indicates that the total money in circulation in the gold standard world has in recent years been increasing at the average rate of $2\frac{1}{2}$% per annum.

We know also that deposits subject to check (M') have greatly expanded. In the writer's article just referred to, statistics have been given to show

[1] *American Economic Review*, September, 1912, "Will the Present Upward Trend of World Prices Continue?"

that deposits subject to check have in recent years been increasing in the gold standard world at the rate of 8% per annum. Théry estimates that commercial bills held by the banks of Europe increased between 1902 and 1912 from about nine billions of dollars to about fifteen billions of dollars, an increase of 69 per cent or an average increase of nearly 6 per cent per annum. These figures are rough estimates, but are regarded by M. Théry as substantially correct. While they are estimates of commercial bills or bank loans and not of deposits subject to check, it is altogether likely that the increase in the latter is at least as great.

The writer's article also shows that there is reason to believe that the velocities of circulation of money and deposits have increased, though it is impossible to state at what exact rates.

In the same article, the volume of trade has been estimated to have increased, but at a considerably slower rate than the expansion of money and deposits.

We see then that the more exact our data the more exactly do they corroborate our theory that prices have risen because of gold and credit inflation.

APPENDIX TO CHAPTER X

THE main object of this book is to study the purchasing power of the dollar and not the number of dollars in incomes, but for the information of the reader, Figure 24 is given, which shows for the United States, according to the best data we have, the course of wholesale prices, retail prices, and money wages. The dark line shows the course of money wages from 1840 to 1907, the last date for which our Bureau of Labour has published general wage statistics. Comparing this curve with the curve for wholesale prices, we derive the following facts: —

(1) Between 1840 and the outbreak of the Civil War, wages increased, while prices decreased, so that the wage-earner gained in real wages.

(2) During the Civil War, prices shot up far faster than wages, so that the workman lost. Afterward, prices fell more rapidly than wages, so that the workman gained.

(3) Between 1879 and 1896, money wages rose, while prices fell, so that the workman again gained.

(4) Since 1896, prices have increased faster than wages, so that the workman has lost. This is especially true of retail prices, the figures for which in

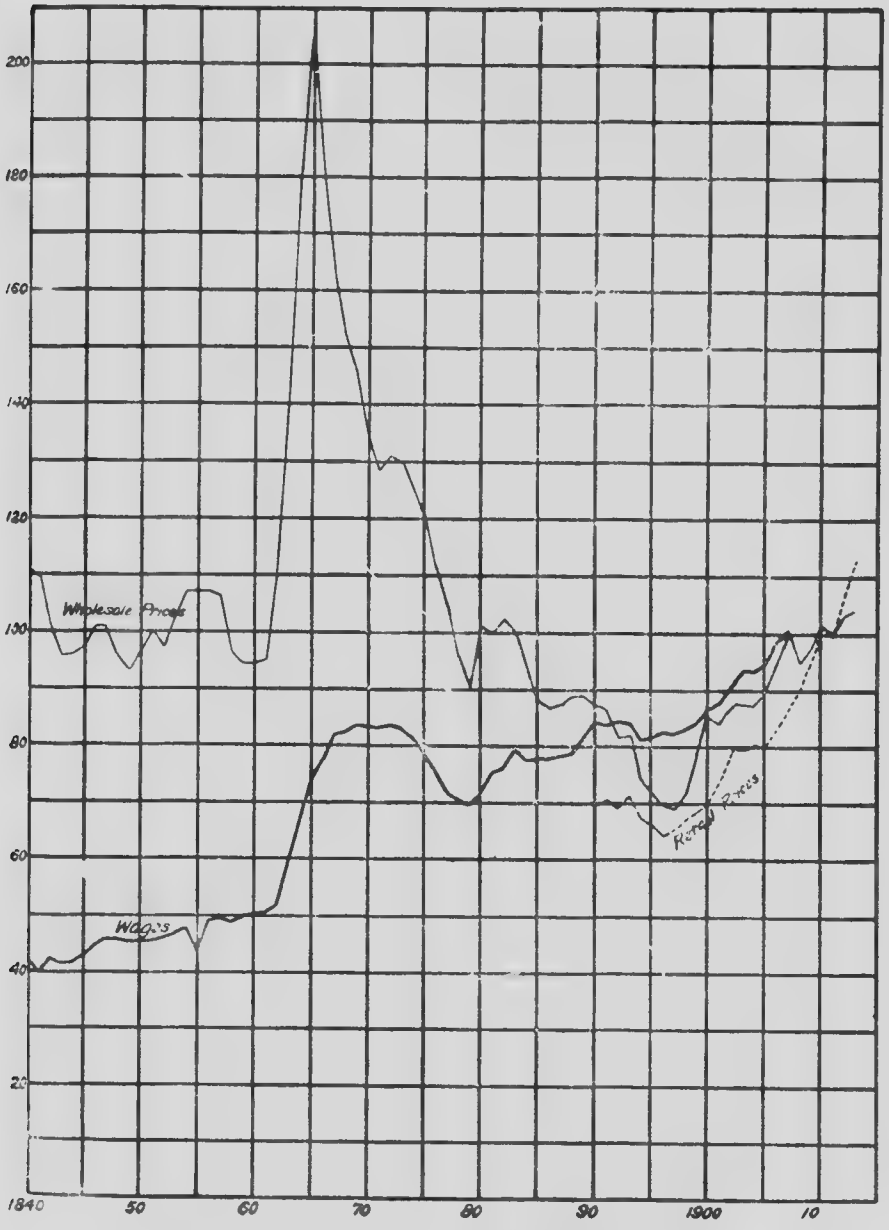


FIG. 24. — United States { Wholesale prices / Retail prices / Wages }

addition to those for wholesale prices are available since 1890, and are shown by the dotted curve.

It will be seen that in general prices move more rapidly than wages, whether the movement is upward or downward. This tendency of wages to lag behind prices puts the wage-earner into the gaining class during a period of falling prices, and into the losing class during a period of rising prices such as the present.

We have no statistics for the incomes of any class other than wage-earners, but statistics as to production and consumption of goods would indicate that the average income of all classes has increased.

CHAPTER XI

CONFUSIONS CONCERNING PRESENT PRICE MOVEMENT

§ 1. Fallacies Underlying Popular Explanations of the High Cost of Living

If the analysis we have given is correct, the shrinkage in the dollar, amounting to more than one-third in the last eighteen years, is due to the inflation of money and credit, or, in other words, to the fact that the means for conducting trade have outrun the volume of trade to be conducted thereby. This conclusion not only fits our analysis in the abstract, but fits the facts as we find them. These show that the use of money and checks has increased in the United States at an average rate of 9 per cent per annum, while trade has only increased at the rate of $5\frac{1}{2}$ per cent per annum, thus accounting for the actual increase of prices of $3\frac{1}{2}$ per cent per annum.

But we cannot satisfy objectors to this conclusion unless we meet their objections on their own ground. Most people argue the problem of the high cost of living on entirely wrong principles. They try to explain the rise in general prices by the same sort of reasoning as they are accustomed to use in trying to explain the rise of price of some particular ar-

ticle. They do not realize one of the truths which this book has aimed to make clear, that it is as futile to explain a general rise of prices by appealing to the particular forces affecting particular prices, as it would be to explain a rise in the ocean tides by appealing to the forces which make the waves. To change the simile, the people who look to a microscopic study of each individual commodity in order to understand the general movement of all commodities "cannot see the woods for the trees." To again change the simile, we cannot assume that the rise of a particular price pulls up the general level of prices with it any more than we can assume that a man who walks upstairs pulls the earth up with him. The man really pushes the earth down an infinitesimal distance and the centre of gravity of himself and the earth together remains unaffected. If it were worth while, we could show that in some cases (not all) a rise in a particular price tends to push down the general level of other prices. For instance, scarcity of food, while it tends to raise food prices, tends to lower the prices of other things, for it causes more income to be spent for food, and so leaves less income for other things, which in turn causes a less effective demand for these other things.

Another summary way of disposing of the problem is to say that "supply and demand explain everything," meaning that each individual price is thus determined and that these together form the general price level. But those who appeal to supply and

demand to avoid the need of appealing to monetary factors leave out of account a very important instance of supply and demand, *i.e.*, the supply and demand of gold. They forget that the supply and demand of gold cannot, under our present system, affect the price of gold itself, for the price of gold is fixed by the weight of our gold dollar (25.8 gr.) at the number of times this weight is contained in an ounce of gold (*i.e.*, an ounce (or 480 gr.) ÷ a dollar (or 25.8 gr.) = $18.60) so that the price of standard gold ($\frac{9}{10}$ fine) must always be $18.60 per ounce. This arbitrary fixation of the price of gold prevents absolutely the natural effect from an increased supply of gold. If the supply of silver is increased, it tends to lower the price of silver, but an increase in the supply of gold cannot lower the price of gold. Since the increased supply of gold cannot lower the price of gold, it takes its revenge, as it were, by raising the prices of other things expressed in gold.

§ 2. Popular Explanations of the High Cost of Living

In order to leave no argument unanswered, let us, for a moment, look at the other reasons ordinarily given for the high cost of living: the tariff, the trusts, the labour unions, shortened hours of labour, the middleman, cold storage, longer hauls on railroads, marketing by telephone, the free delivery system, the individual package, the enforcement of sanitary laws, the tuberculin testing of cattle and the destruction of tainted meat, sanitary milk, advertising, un-

scientific management, the elimination of renovated butter, and of "rots" and "spots" in eggs, food adulteration, wars, armaments, extravagance, concentration of population in cities, impoverishment of the soil, the displacement of the neighbourhood farmer, the fact that farmers' wives no longer compete in butter making or poultry raising, droughts, and the high cost of land.

We shall take up briefly these alleged causes in the order above named.

As to the tariff, it is quite true that the imposition of a tariff tends to "dam up" the money in a country and so to raise the level of prices, as has been explained in previous chapters. But needless to say, this way in which the tariff affects the price level is quite foreign to the thought of those who would fix the responsibility on the tariff. They believe that the tariff, quite irrespective of any effect on the quantity of money, tends to keep individual prices high (as indeed it does in some cases) and therefore (they imagine) to raise the general price level. As we have seen in the last section, this reasoning from individual to general prices is fallacious. Moreover the American tariff cannot be held responsible for the world rise of prices with which we have to deal. Prices have risen in countries both with high tariffs and with low tariffs.

Similarly, the trusts cannot be held responsible for the rise of prices throughout the world. Prices have risen in countries with and in countries with-

out trusts. Moreover, trust-made goods have, apparently, risen in price rather less than goods in general. It is true, however, that trusts have, in the United States, greatly increased the supply of negotiable securities which have been utilized as collateral securities for bank loans and become the basis for deposits, thus aiding in credit inflation. But this manner in which trusts have tended to raise prices is again quite foreign to the thought of those who would fix the responsibility on trusts. They assert that trusts raise prices arbitrarily and that what they can do toward raising individual prices tends to raise the general price level.

Nor can labour unions and their attempts to restrict output be held responsible for so gigantic an effect as that with which we have to deal. For, in the first place, labour unions are not a phenomenon of the last decade and a half, but existed in the previous period of falling prices; and secondly, any effect due to labour unions in the last eighteen years would be confined to the United States, England, and a few other places where they have grown in activity in that period and could not be held responsible, for instance, for the rise of prices in India.

The reduction in the hours of labour might conceivably, by reducing fatigue and so increasing the productivity of labour, increase the volume of trade and so tend to reduce rather than raise prices. But trade unions are making the mistake of using shortened hours as a means of limiting the output. It

is a part of their self-injuring "go easy" policy. This, of course, has a tendency to reduce the volume of trade and to raise prices in accordance with the equation of exchange. Yet we cannot explain the rise in the cost of living by a reduction in the volume of trade, for, as a matter of fact, the volume of trade has not been reduced.

The middleman has come in for much blame in the last few years. Whether as a whole the middleman's profits are greater than formerly is a fair question. Granted, for the sake of argument, that in the last eighteen years the middleman's profits have greatly increased, not only absolutely, but relatively to the rise of prices, the effect would simply be that of a wedge driven between retail and wholesale prices. But here again, whatever the theoretical tendency, the facts do not show any considerable wedging apart of wholesale and retail prices. Wholesale prices have certainly not fallen, but risen, and they seem to have risen in general almost as fast as retail prices.

Cold storage has been blamed simply because at certain seasons of the year the indignant customer has been told by the retailer that he cannot lower prices so long as the cold-storage people are withholding great quantities of goods. As a matter of fact, however, taking the year round, the effect of cold storage is not to raise prices, but simply to *even* prices, raising them in certain seasons when they would otherwise be low and lowering them in other seasons when they would otherwise be high.

Longer hauls on railroads, the telephone, free delivery service, the individual package, the enforcement of sanitary laws, tuberculin testing of cattle and the destruction of tainted meat, sanitary milk, advertising, unscientific management, the elimination of renovated butter, and of "rots" and "spots" in eggs, are all alleged reasons for an increase in the cost of production. We may, for brevity, overlook the fact that many of these changes improve the quality and so give the consumer a *quid pro quo*. But we cannot overlook the fact that these alleged increases in the cost of production must either be very small of themselves, or must be more than offset by economies elsewhere in production, for the simple reason that the actual cost of producing goods to-day, *in terms of labour*, is undoubtedly less than it was eighteen years ago. We must not measure the cost of production in money simply, without taking into account the loss in the purchasing power of the dollar. Otherwise we shall be reasoning in a circle, and merely trying to explain the rise of prices of goods by means of the rise of prices of labour, or *vice versa*.

Of all the alleged explanations of the high cost of living, none are more shallow than those which explain it in terms of high money costs of production. Such an explanation merely explains one price in relation to another price. It is, of course, true that many prices are related to each other. The price of bread and the price of wheat are related to

each other and must always move in sympathy. One of these prices cannot go up very much without the other going up also, but when the baker tell us that bread has risen in price, because of the rise in the price of wheat, he has not explained the rise of either bread or wheat. He has merely shoved the explanation on to something outside of his own business. It is, of course, a part of a business man's duty to look at the immediate causes affecting the prices with which he deals, but if we want an explanation of price movements, we must look beyond these immediate causes to remoter ones. In other words, if the baker would really explain the rise in the price of bread, he must explain also the rise in the price of wheat, and he cannot do this by again shoving off the explanation to another commodity. Such a method of explanation never strikes the root of the matter. It continually shifts the explanation. It is like the explanations of the old philosophers who said the earth was held up by a giant. When asked to explain what held the giant up, they alleged a turtle on which he stood. We still need to know what holds the turtle up, and no matter how many stages back we go, so long as we have to assume another supporting agent, we really get no fundamental explanation. What we wish to explain is the rise in prices of things in general. It does not help us much when our grocer tells us he is charging higher prices because he is charged higher prices by some one else. Naturally the re-

tailer likes to excuse himself by putting it off on the wholesaler, and the wholesaler in turn excuses himself by explaining that his costs of production, that is, the prices he is charged by the jobber, have gone up. The jobber in turn accuses the producer and the producer points to his increased wage bill; but even this does not give us any final result. The wage-earner tells us that he has to get higher wages because of the higher retail prices which he has to pay. So this effort to explain the high cost of living merely comes around again to the high cost of living itself.

Such reasoning reminds one of a cartoon published a few years ago in which a number of men were standing in a circle each labelled and each pointing an accusing finger at his neighbour around the circle from retailer to wholesaler, jobber, producer, wage-earner, and retailer again.

Food adulteration is practically the opposite of some of the above-named processes which aim to improve and not deteriorate the quality of food. If improving foods raises their price, adulterating foods with cheap ingredients should lower their price as well as quality. Exactly by what reasoning food adulteration can be shown to raise the cost of living has never been explained. Such talk illustrates the easy way in which people point to any current event as a supposed cause of the high cost of living.

Wars and armament represent a waste, but a waste which has been going on far longer than has

the rise of prices. Undoubtedly these causes tend to lower the volume of trade, but their effect is greatly exaggerated. This is evident, not only from the fact that the volume of trade has greatly increased in spite of the increased expenditures in times of peace for war armament, but also by the fact that any increase in these expenditures, colossal as they seem, are extremely small compared with the volume of trade. The increase in war armament during the last decade and a half may amount to a few hundreds of millions a year, but the volume of trade amounts, in the United States alone, to nearly five hundred billions.

Instead of wars being the cause of the high cost of living, the high cost of living is sometimes a part cause of wars. The world-wide discontent produced by the high cost of living has been known specifically to have caused violence in bread and meat riots, has helped overturn political parties, and probably has had some share in the rebellions and wars of Europe. The Chinese Revolution is also said to be largely due to the rise in the price of rice, for China has apparently been having an inflation of her own.

Extravagance or luxury is another cause which is not confined to the last eighteen years, yet prices fell in former times while luxury existed, just as truly as prices have risen in recent years.

The increase in extravagance and luxury during the last twenty or thirty years — so far

as such an increase has actually occurred — is due partly to the fact that in actual wealth the world is more able to enjoy luxury to-day than formerly, and partly to the fact that the rise of prices itself has shifted wealth into the hands of an easy spending class. Expanding the first of these two statements we may say that one reason why people spend more to-day on automobiles, electric lights, bath-tubs, etc., is that these modern conveniences have only recently been perfected and been made generally available. Twenty years ago people did not spend money on automobiles because the automobile did not exist. The prevalence of automobiles to-day means invention and wealth, rather than an increase in the spirit of extravagance.

Turning to the second reason for increased extravagance, we may say that, so far as there has been any real increase in this general direction, it is a symptom or effect of the high cost of living, rather than a cause. When prices are rising, wages, interest, and rent tend to lag behind; consequently the "enterpriser" in business, for a time, gains, because these expenses do not increase as fast as the prices of his products increase. The enterpriser, the speculator, the plunger, who gain for a time by rising prices, constitute a class especially prone to display and luxury. In short, those who would ascribe the high cost of living to a cost of high living are reversing cause and effect.

The concentration of population in cities is supposed, by reducing the number of producers and increasing the number of consumers, to have increased the cost of living. It is true that this migration to the city tends to reduce farm products, but the fact is, farm products have increased nevertheless. Moreover the city dwellers are not mere idle consumers, but active producers of manufactured and other goods, which, however, have risen in price as truly, even if not as much, as farm products.

As to the alleged impoverishment of the soil, the displacement of the neighbourhood farmer and the fact that farmers' wives no longer compete in butter making or poultry raising, it is a great mistake to believe that the farm (including the farmer and his family as productive agents) has, as yet, lost in its power to feed the world. The facts do not bear out the conclusion that there is any falling off in the products of the farm. On the contrary, the figures of the International Institute of Agriculture at Rome, as well as of our own Department of Agriculture in America, lead to exactly the opposite conclusion. It is true that the census figures for 1910 showed a decrease per capita in farm products as compared with 1900. But the particular contrast between these two census years is not typical, as Mr. Nathaniel C. Murray, of the Department of Agriculture, has shown. Sir George Paish, an eminent English economist, has given statistics for England, showing that the produc-

tion of grains taken altogether has increased 54 per cent during the last eighteen years. This represents an increase of $2\frac{1}{2}$ per cent per annum while the increase in population has only been about 1 per cent per annum. Taking the last few years and comparing them with the late 90's, we find, both in this country and other countries, no evidence of falling off in agriculture, but every evidence of progress, not only absolutely but relatively to population.

The droughts which have been cited as causes of high prices are too local and temporary to bear examination as a cause of a world-wide and eighteen-year-long rise of prices.

A recent writer emphasizes the high cost of land, especially in cities, the figures for which he claimed "proved absolutely" that the high cost of living was due to this cause, but he quite forgot the fact that at the early periods with which he compared the modern price of real estate, the cost of living was actually higher than it is to-day! In so far as the cost of real estate has really gone up in the last eighteen years, we must remember that when all else rises, the price of land will necessarily rise also. This is merely one more example of the very common pitfall into which so many unconsciously fall, of explaining the rise of one price by the rise of another. It is as though a Massachusetts fisherman should explain the rise of tides there by the rise of tides on the Maine coast and pass this off as an explanation of the rise of tides in general Of course it is true,

that if the tides rise on the Maine coast they must rise on the Massachusetts coast also. But the opposite is equally true and neither explains the rise of both. It is idle to explain the general rise from the simple fact that some particular price has risen. What we must seek is the fundamental cause raising all prices.

That cause, we have seen, is inflation, both of money and of credit. This is well recognized by most students of the subject, but is not yet recognized by the general public, partly because they are misled by the fallacies and careless statements which we have just been discussing, and still more because they do not understand either the principles which affect the purchasing power of the dollar or the facts of human history.

It has been the aim of this book to set forth, as simply as possible, these principles and facts. In brief, the aim has been to show that: —

(1) The general price level (P) is determined by the other factors in the equation of exchange (money, deposits, their velocities, and trade, or M, M', V, V' and T).

(2) So far as we have evidence, the facts of history agree with this conclusion. In particular, prices have risen after new gold discoveries or banking expansion; have fallen after monetary or credit contraction; have moved alike among countries having the same monetary standard; have moved differently among countries having different monetary standards (gold, silver,

paper); and, where we have statistics for *all* the causes affecting price levels (viz. M, M' V, V', and T), have changed from year to year by almost exactly the right amounts to fulfil the theory.

(3) The rival theories to explain the high cost of living are none of them in agreement with the facts.

It is altogether natural and inevitable that the true reason for the high cost of living should not be generally understood, for the simple reason that few people have studied monetary science and history enough to master them. The same misunderstandings have invariably appeared at all periods in the past when price revolutions were in progress. Phœbe Sheavyn, in her book from which I have quoted earlier in this volume, in referring to the Elizabethan Age, when prices were rising in much the same way as to-day, and for much the same reasons, says: —

"This 'dearth' (*i.e.*, dearness) of the necessaries of life is a frequent topic with Elizabethan writers on social questions. They are puzzled to account for it in the face of the evident prosperity of the nation."

A study of the literature of two generations ago, when the mining of gold in California and Australia was inflating the world's currencies, reveals popular confusions precisely similar to those now prevalent. And many of us will remember the numerous fanciful causes to which a generation ago the prolonged fall of prices then in progress was mistakenly ascribed.

§ 3. Effect of Fallacious Beliefs

But although the world is entirely misled and confused as to the causes of the high cost of living, the very fact that they are misled and confused is itself a fact of portentous significance and is leading to important events, political, social, economic. Just as the misunderstandings as to falling prices in the '80's and '90's led to the free silver campaign of 1896 and stimulated the Irish Land Agitation and Home Rule movement, so the misunderstandings as to the rise of prices now going on are leading to various proposals in various places. They have stimulated the demand for lower tariffs, which has already become effective in America, and which is being insistently pressed in other countries, notably Germany, France, and Japan. On the other hand, in England the high cost of living has been cited as a reason why England should encourage its own productions by putting on a tariff. Everywhere the effect of the unrest is to propose a change from the present condition of things to something alleged to be better.

Probably there is no bigger force in the world today working for socialism than the rising cost of living. The workingmen are told that this rise is due to "capitalism" and are urged to fight capitalism. A socialist recently said to me: "I realize perfectly that the high cost of living is primarily due to the increase in gold production and the inflation of the world's currencies, but it is an ill wind that does

not blow some one some good and I am not altogether sorry to see the high cost of living used in Germany and elsewhere as a lever to arouse the workingman to become a revolutionary socialist."

The dissatisfaction and unrest among wage-earners is certainly profound and widespread. As already noted, it has led to bread and meat riots in Germany, Austria, France, and Japan. Byron W. Holt predicted, in a remarkable article written seven years ago, "a prolonged period of rapidly rising prices, is reasonably certain to become a period of unrest, discontent, agitation, strikes, riots, and wars."

But discontent is not confined to the labouring man. Salaried men of all kinds, — *i.e.*, clerks, teachers, officials, etc., — chafe under the same injustices. The beneficiaries of trust funds invested in bonds, such as widows and orphans, and endowed institutions, such as colleges and hospitals, suffer because their interest remains the same while prices rise. Bonds and mortgages have grown unpopular and have fallen greatly in price. One great life insurance company has lost some fifty millions of dollars through such depreciation. Even the railroads are finding difficulty doing business under their present rates because their prices are fixed by law, while their costs go up with the rise in the general price level. This is the fundamental reason why railroads are asking permission to raise their rates.

For these reasons, because of the actual injustices produced by rising prices through interference with

distribution and the subtle transfer of wealth from those having fixed money incomes to other members of society, it becomes of the utmost importance to know whether rising prices may be expected to continue in the future. This problem will be studied in the next chapter.

CHAPTER XII

THE FUTURE

§ 1. As to Money

WHETHER prices will continue to rise is a question difficult to answer fully and with statistical precision, owing to lack of data sufficiently complete. And yet there are a thousand statistical straws in Europe and America which show clearly which way the wind is blowing.

This evidence takes account of all the chief factors which can influence the *general* price level. Predictions based on one factor only are most worthless. Thus, although gold is an important factor in the case, those predictions which are based only on forecasts of future gold production are of little value. In order to forecast the future we need to examine the prospects for each of the five factors in the equation of exchange which affect the price level (P). These are money (M), its velocity (V), deposits subject to check (M'), their velocity (V'), and the volume of trade (T).

Our study leads to the general conclusion that inflation is destined to continue in the future, that is, that the facilities for exchanging goods are likely to increase much faster than the requirements of busi-

ness. Taking the world as a whole, money and credit substitutes for money, that is, checks, will, according to these calculations, outstrip the growth of business by probably as much as 2 per cent per annum, causing, therefore, an annual rise in prices of about 2 per cent per annum, possibly less, but probably more. For the United States in particular the rise in the price level for the next few years is likely to be arrested by the tariff reductions of 1913, causing an export of gold and a contraction of our currency, although the new currency act will tend to expand the deposit currency of the country and so prolong the period of adjustment by means of the export of gold. After a new equilibrium is established, the upward movement is likely to be renewed again.

We can best justify these conclusions by a brief review of the evidence.

First, then, let us consider the future world supply of money. This will be affected by gold mining and by changes in monetary systems. There is some reason to believe that gold production has reached its maximum and may, in the future, gradually decline, but it would be a great mistake to jump to the conclusion that prices must therefore fall. At the present writing the reports for the world's gold production in 1913 are exciting comment, and many are rejoicing or complaining because an actual reduction has apparently occurred. But such a view overlooks the fact that it

is not the annual output of gold, or even the annual absorption of gold into the currencies of the world, which really affects prices, but the total *stock* of gold money. The world's stock of gold money may continue to increase long after gold production has begun to fall off, just as a lake may continue to rise long after the mountain torrent which is filling it has begun to subside. The lake continues to fill up so long as the inflowing stream, subsiding though it may be, still continues to pour in faster than evaporation and other drains draw the water out. The great lakes of the world's gold coin will fill up so long as the mines, even while being exhausted, nevertheless continue to pour in gold faster than the consumption and loss of gold drain it out.

The most careful review of present gold-mining conditions shows that we may expect a continuance of gold inflation for a generation or more. In 1908 de Launay, in *The World's Gold*, wrote: "for at least thirty years we may count on an output of gold higher than, or at least comparable to, that of the last few years." This gold will come from the United States, Alaska, Mexico, the Transvaal, and other parts of Africa and Australia, and later from Colombia, Bolivia, Chili, the Ural Province, Siberia, and Korea. Professor Edgeworth David, of Sydney University, the Australian geologist who accompanied Shackleton on his Antaretic expedition, anticipates that gold reefs will be found in this region as rich and workable as those of Alaska.

All this takes no account of possible improvements in metallurgy. But if we let imagination run a little ahead of our times, we may expect such improvements in the future, just as in the past. Still lower grades may be worked or possibly the sea compelled to give up its gold. Like the surface of the continents, the waters of the sea contain *many thousand* times as much gold as all the gold thus far extracted in the whole history of the world. It is hoped that the knowledge of how to get this hidden treasure may not be secured. To whatever extent inventors and gold miners might be enriched thereby, scarcely a worse economic calamity can be imagined than the resulting depreciation. It may be, however, that only by such a calamity can the nations of the world be aroused to the necessity of getting rid of so elusive a standard of value as the present gold standard.

Besides the actual increase of gold there is a virtual increase through the release of Oriental hoards. We may, I believe, expect such a release of Oriental hoards in the future. The astonishing lengths to which hoarding is now carried in Egypt and India are emphasized by Director Roberts of the United States Mint. He says: —

"The Egyptian situation is somewhat like that of India — but there is some mystery about the way the gold disappears from view. It does not enter into bank stocks, and it is difficult to understand how a country of its size and population and in which the masses of the people are so poor can absorb so

much gold. . . . Some light is shed upon the situation by the following statement in an address by Lord Cromer, made in London in 1907:—

"'A little while ago I heard of an Egyptian gentleman who died leaving a fortune of £80,000, the whole of which was in gold coin in his cellars. Then again, I heard of a substantial yeoman who bought a property for £25,000. Half an hour after the contract was signed he appeared with a train of donkeys bearing on their backs the money, which had been buried in his garden. I hear that on the occasion of a fire in a provincial town no less than £5,000 was found in earthen pots. I could multiply instances of this sort. There can be no doubt that the practice of hoarding is carried on to an excessive degree.'—(*The Statist*)."

In the minutes to the Report of the Indian Currency Committee which appeared in 1892, or over twenty years ago, the presiding Chairman, Lord Farrer Herschell, gave the following evidence:—

"It is remarkable how soon coined money disappears in India. I was there at the time of the American war, when large sums of money came into the country and momentarily there was an immense advance in the price of everything in Bombay; but in a short time the great flood of silver that came in disappeared among the great population of India as water would in sand."

The amount of such hoards has been emphasized by Director Roberts, in the passages quoted as

evidence that they provide a future sink for gold and thus tend to absorb gold, and perhaps arrest the rise of prices. There can be no doubt that the Oriental hoarding will continue for years to afford an outlet for redundant gold and so tend to mitigate the resultant rise of prices. But it is erroneous to conclude that it will be sufficient to arrest this rise. The weakness of such an argument lies in the tacit assumption that the influence of hoarding will be more powerful in the future than in the past, whereas the opposite is more likely to be the case; and even in the past it has not been sufficient to prevent a rapid rise of prices.

In the future we must reckon with a lessening tendency to hoard. Just as with the introduction of banking, hoarding long ago went out of vogue in England, and more recently in France, so it must surely, if slowly, go out of vogue in India and Egypt. The transformation will take place as these countries gradually introduce Occidental banking. Already there is a rapid growth of banking in these countries.

The same principle applies to Oriental hoards in the form of ornaments. Centuries ago Englishmen used to put part of their hoards into "plate," which could be reconverted into coin if emergency required. With the advent of banking devices such a custom has long since disappeared. It is to be expected that little by little the same process will turn part of the Oriental hoards of ornaments into monetary use. Thus, as a consequence of the introduction of

Western civilization into the Orient, we have the prospect of further additions to the effective use of the world's gold, a further virtual inflation of the currency. In other words, Oriental hoarding merely gives temporary relief. Part of the gold dug out of the ground in Africa is put back into the ground in Asia. But some day it is sure to be dug up again and put into circulation.

Director Roberts says: —

"There is an undoubted tendency in all countries to use banks more than formerly, and it is probable that the stock of gold in banks has been recruited not only from new production, but to some extent from gold heretofore held in private hoards and out of use. In every country the younger generation to whom these hoards descend is likely to put them to some use."

Not only individual hoards but also government hoards and even bank hoards seem likely in the future to decline or at any rate to cease being accumulated. A decade and more ago gold was so scarce as compared with the demands made upon it that a large part of the early additions to the world's stock were absorbed to strengthen weak reserves and government hoards and to replace silver and paper. About a billion of gold has been accumulated by the United States in the last ten years and about half a billion by Russia and France. Moreover, Japan, Argentina, and Brazil have absorbed much gold. India, Mexico, the Philippines,

Panama, and the Straits Settlements have made demands on gold to sustain their "gold exchange standard." An economist of note writes:—

"The effect in raising prices, I think, would have been vastly greater than it has been had not the United States, Russia, and Egypt been hoarding gold and thus employing it uneconomically."

These demands on gold have now been so far satisfied that in the future any addition to the world's stock will be freer to enter actual circulation and so to act on prices.

As has been previously explained, hoarded money is simply money which circulates slowly or not at all. Consequently the discontinuance of hoarding will mean an increase in the velocity of circulation of money, and this will tend to raise prices. It will furthermore mean the placing of money in banks, and this money will be the reserve on the basis of which five or ten times as much "deposits subject to check" will develop. These deposits will not only be five to ten times as large an amount as the money they displace from circulation, but, judging by Occidental experience, they will also circulate two or three times as fast. Consequently their power to affect prices will be ten to thirty times as much as the money displaced.

The discontinuance of hoarding, therefore, will, in various ways, tend to raise prices. To be conservative, I have assumed in my calculations that the effect on the velocity of circulation of money will not

be sufficient to raise its rate of increase above $\frac{1}{2}$ per cent per year. But it would not be surprising if the truth should be several times this figure, particularly as the extension of rapid transportation will also tend powerfully in this direction, especially in slow and backward countries like India.

We see, then, that in the future monetary inflation is likely to be at work, both through an actual increase in the quantity of money and also through its virtual increase, which will be brought about by the release of the great hoards of money in the East. Since the discontinuance of hoarding means the same thing as an increase in the velocity of circulation of money, our conclusion may be stated as follows. Monetary inflation may be expected, both from an increase in money and from an increase in its velocity of circulation; that is, to go back to the equation of exchange, an increase in both M and V.

§ 2. As to Credit and Volume of Trade

We have just mentioned the effect which the discontinuance of hoarding money will have on the volume of deposits subject to check. Let us now consider in a more general way the importance of the growth of these deposits all over the world. When once it is generally recognized that deposits subject to check are a form of currency similar in function to bank notes, — in fact, are today the *chief* form — the discussion of the price level will assume a [illegible] phase.

In the United States the volume of check transactions forms 92 per cent of all transactions. Probably something like this ratio obtains in Canada and England. Outside of English-speaking lands, however, the ratio is undoubtedly much less. If we could assume that the volume of check transactions maintains a constant ratio to that of money transactions, the circulation of checks would not then have to be reckoned with as an independent factor. Some day in the future, when the use of checks has grown up to its full capacity, it would not be strange if the ratio of check expenditure to money expenditure should thereafter remain fairly constant. At present, however, the use of checks in place of money is being extended with prodigious rapidity, and far faster than the use of money. *This is the dominant feature of the present situation and forms the chief basis of the forecast here attempted.* All nations are making a continually larger use of checks relatively to money. The present rate of increase in France is 7 per cent, in Germany 13 per cent, Holland 9 per cent, Denmark 10 per cent, Norway 8 per cent, Sweden $5\frac{1}{2}$ per cent, Switzerland 5 per cent, Russia $2\frac{1}{2}$ per cent, Japan 10 per cent, the Austro-Hungarian Bank 17 per cent. In backward India, where deposit banking has only just begun, the rate of increase is 9 per cent, in Mexico 11 per cent. Even in English-speaking lands, where checks have been used for so long a time, and where, therefore, if anywhere, we should expect to find that their use had nearly

reached its limit, the volume of deposits is still increasing; in England at the rate of $3\frac{1}{2}$ per cent per annum; in the United States, at 7.3 per cent; in Canada, at 12 per cent; and in Australia, at $3\frac{1}{2}$ per cent. (The data for Australia are too meagre to be considered representative.)

Outside of English-speaking countries the use of checks is still in its infancy. Continental Europe and Japan during the next few decades, will represent a vast region for the extension of deposit banking. It would not be surprising if, in Germany and other Continental countries, the use of checks should soon reach the stage when every business man would begin to realize that he must employ them. When this feeling appears the use of checks will increase at an even more rapid rate than at present. The deposit currency of the United States now far exceeds that of other countries, but the deposit currency of Continental Europe and Japan will become more and more prominent, and by the time — perhaps a generation hence — when their rate of increase begins to slacken, India and other of the (now) backward countries will need to be reckoned with.

Finally, we have the testimony of the statistics of clearing-houses. The rate at which these increase is used as a rough indication of the rate at which the use of checks increases. Clearings in general show a more rapid rate of increase than deposits. This indicates that the use of checks is increasing faster

than the deposits against which they are drawn, which means that the activity or velocity (V') of these deposits is increasing.

In the United States the velocity or "activity" of deposits has shown a progressive tendency to increase. Concentration of population in cities and rapid transportation, etc., tend to increase this velocity. The activity of deposits varies almost exactly with the size of the cities, and the range of variation is surprisingly great. Thus the activity exceeds 100 times a year in Paris, Berlin, and Brussels, but is only 16 times a year in New Haven, Connecticut, four times a year in Athens, Greece, and only once a year in Santa Barbara, California.

These results accord with the fact that the velocity of circulation of deposits in the United States has increased very substantially, while the concentration of population has been going on. During the last eighteen years it has risen from 37 times a year to 54 times a year, that is, about 2 per cent per annum. In the world as a whole the rise is probably as great.

Finally, we come to the volume of trade. This is the one factor which acts to restrain the rise of prices. The volume of trade will continue to increase in the future as in the past; but as far as I know, there is no evidence that it will expand any faster in the future than it has in the years which have just passed by; and no evidence that it will, as long as the present development of banking continues, outstrip the expansion of media of exchange.

On the contrary, there is some reason to believe that trade, while it will continue to expand, will expand more slowly in the future than in the past. The fuller occupation of the land of the world and the decrease in the rate of growth of our population, which is partly a consequence of this occupation and partly a consequence of the voluntary decrease in the birth-rate, should tend to curb the rate of increase, although the rate of increase will doubtless continue great.

§ 3. Conclusions

For the gold-standard world as a whole (comprising now all the important commercial nations except China), my estimates, as finally adjusted, indicate that: —

The quantity of money in circulation is increasing at the rate of $2\frac{1}{2}$ per cent annually,
Its velocity of circulation, $\frac{1}{2}$ per cent,
Deposits, $6\frac{1}{2}$ per cent,
Their velocity, $1\frac{1}{2}$ per cent.

These four make an increase in the total circulation of media of exchange of 7 per cent per annum. This is outstripping trade, which is growing only $4\frac{1}{2}$ per cent per annum. In short, then, world prices have been going up $2\frac{1}{2}$ per cent a year because facilities for payment are outstripping the growth of trade by that amount.

There is every reason to believe that these rates for the increase of money, deposits, and their ve-

localities will be no less in the future than in the past, and that the growth of trade will be not much, if any, greater; but, to be conservative, I have reduced the estimates for the growth of money and deposits.

The following estimates for the future rates of increase of the primary world factors in the problem seem, therefore, conservative: —

Money, not less than 2 per cent per annum.
Its velocity, not less than $\frac{1}{2}$ per cent per annum.
Deposits, not less than 6 per cent per annum.
Their velocity, not less than $1\frac{1}{2}$ per cent per annum.
Trade, not more than $4\frac{1}{2}$ per cent per annum.

Further calculation results in the estimate that the total use of money (*i.e.*, the product of money multiplied by its velocity, or MV) will grow at least as fast as $2\frac{1}{2}$ per cent per annum; and that of checks ($M'V'$) as fast as $7\frac{1}{2}$ per cent. Checks being much more important than money, it can be shown that the average growth of the combined facilities for buying goods (by both money and checks) will probably be *at least* $6\frac{1}{2}$ per cent per annum. As trade promises to grow *at most* only $4\frac{1}{2}$ per cent per annum, I regard the difference ($6\frac{1}{2} - 4\frac{1}{2}$), or 2 per cent, as a fairly safe minimum estimate for the future average annual expansion of the scale of prices, while, humanly speaking, I feel perfectly safe in predicting that the general trend of world prices for many years to come *will not be downward.*

Of course no price curve shows a continuous movement; it undulates constantly, and we are just now recovering from something like a crisis. Accordingly, there is a temporary subsidence in the rise of prices. After this is over prices will in all probability resume their upward course although they will doubtless continue to undulate somewhat from year to year. But the general trend during the next two decades, let us say, will probably be upward for the world as a whole.

The lowering of the tariff in the United States will tend to produce an export of gold for a few years to pay for increased imports and so reduce the volume of currency and thus tend to reduce prices.

The currency act, on the other hand, must inevitably tend to expand the currency, for it will put a stop to our present uneconomical use of bank reserves and substitute a system which will virtually release reserves now locked up. The tendency of this change (however desirable on other grounds) must be to inflate the currency still further and to raise prices. But as it will accelerate the export of gold, the ultimate result will simply be to spread the effect over other countries. For the United States itself the price level will tend to approximate that of the outside world. This approach toward the world's price level through the export of our gold may occur either through a fall of our prices or, what is more likely, a rise in prices elsewhere. In short the net effect will probably be a distinct arrest for

perhaps a decade in the rise of prices in the United States, while prices abroad are rising to catch up with ours.

These forecasts (that world prices will rise in the next decade or two with some temporary interruptions, including that now due in the United States while we are adjusting internal trade to a lower tariff) may, of course, not be realized. Prices may fall or stand still, but they are not likely to stand still. Judging from the past, the course of prices, like the course of true love, "never did run smooth," and it would be surprising if it should run smooth in the future. In the early '90's the world was seeking relief from an intolerable fall in prices and at first the prospect of rising prices was hailed with delight. But two wrongs do not make a right. If in the next ten years prices should fall rapidly, the world will not be thankful, but will resume the old complaints of depression of trade, the burden of debts, and all the evils in men's minds twenty years ago. What is needed is neither a rise nor a fall in prices, but a stable price level. This means a dollar stable in purchasing power.

It is unfortunate that the purchasing power of money should be always at the mercy of every chance of gold-mining. There are few enterprises more subject to chance than gold-mining. There are always chances of finding new gold deposits, chances of their "panning out" well or ill, and chances of new methods of metallurgy. On these

fitful conditions the purchasing power of money is now dependent. Consequently, every one interested in long-time contracts, whether debtor or creditor, stockholder or bondholder, wage-earner or savings-bank depositor, is made to some extent a partaker in these chances. In a sense every one of us who uses gold as a standard for deferred payments becomes a speculator in gold. We all take our chances as to what the future dollar will buy. The problem of making the purchasing power of money stable so that a dollar may *be* a dollar — the same in value at one time as another — is one of the most serious problems in applied economics.

In another book I hope to show how this problem of standardizing the dollar can best be solved.

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